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### THE 1980 SINO-AMERICAN BOTANICAL EXPEDITION TO WESTERN HUBEI PROVINCE, PEOPLE'S REPUBLIC OF CHINA

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THE BOTANICAL SOCIETY OF AMERICA'S Committee for Scientific Liaison with the People's Republic of China, chaired by Peter H. Raven, director of the Missouri Botanical Garden, and a corresponding committee of botanists in the People's Republic of China, chaired by Tang Pei-sun, director of the Institute of Botany, Academia Sinica, Beijing, successfully sponsored and arranged exchange visits of American botanists to the People's Republic of China in 1978, and Chinese botanists to the United States in 1979. These delegations were limited to visiting botanical institutions, and the exchange resulted in a basic understanding by the participants of the current status of botanical research in both countries (see Thorhaug, 1978; Bartholomew, Howard, & Elias, 1979; Howard, Bartholomew, & Elias, 1979). At the conclusion of the visit by the Chinese delegation to the United States in early June of 1979, a meeting was convened at the University of California, Berkeley, to discuss the kinds of cooperative programs that might be developed in the future. The general consensus of the participants at that meeting was that steps should be taken to promote cooperative ventures beyond the delegation level, and that joint participation in botanical research was highly desirable.

As a direct result of the Berkeley meetings, five American botanists were invited by the Academia Sinica to participate in a botanical expedition in China with Chinese colleagues. In return, five Chinese botanists were invited to the United States for a one-year period to study at botanical institutions and to take part in fieldwork. The purpose of this report is to summarize the activities and results of the 1980 Sino-American expedition, the first joint



botanical expedition involving botanists from the United States and the People's Republic of China since the founding of the People's Republic in 1949.

The 1980 Sino-American Botanical Expedition to western Hubei<sup>1</sup> Province was conducted under the auspices of the Academia Sinica and the Botanical Society of America and consisted of a three-month (15 August–15 November 1980) visit to the People's Republic by the American participants. Professor S. C. Sun, director of the Wuhan Institute of Botany and chairman of the Department of Biology, Wuhan University, was the expedition leader. Most of the field investigations were conducted in the Shennongjia Forest District in western Hubei Province, with additional fieldwork in the metasequoia region of Lichuan Xian in southwestern Hubei. The herbarium collections made in both areas are enumerated in the list presented below, but a report of the brief visit to the metasequoia region is presented in a separate paper (Bartholomew, Boufford, & Spongberg, 1983) that follows this report.

Once the fieldwork had been concluded, the American participants visited several botanical institutions and botanical gardens throughout China before returning to the United States. During that period, time was available for individual study in the herbaria and libraries and for observation and discussion of the research being conducted in those institutions.

The following sections summarize the ecological, physical, and climatic conditions of the Shennongjia Forest District, previous botanical exploration in the area, and observations on current lumbering practices in the region. A list of determinations of the collections concludes this report. During the six weeks spent in the field, 2085 collections were made, of which 1715 numbers represent vascular plants. A separate report concerning the collections of nonvascular plants is planned.

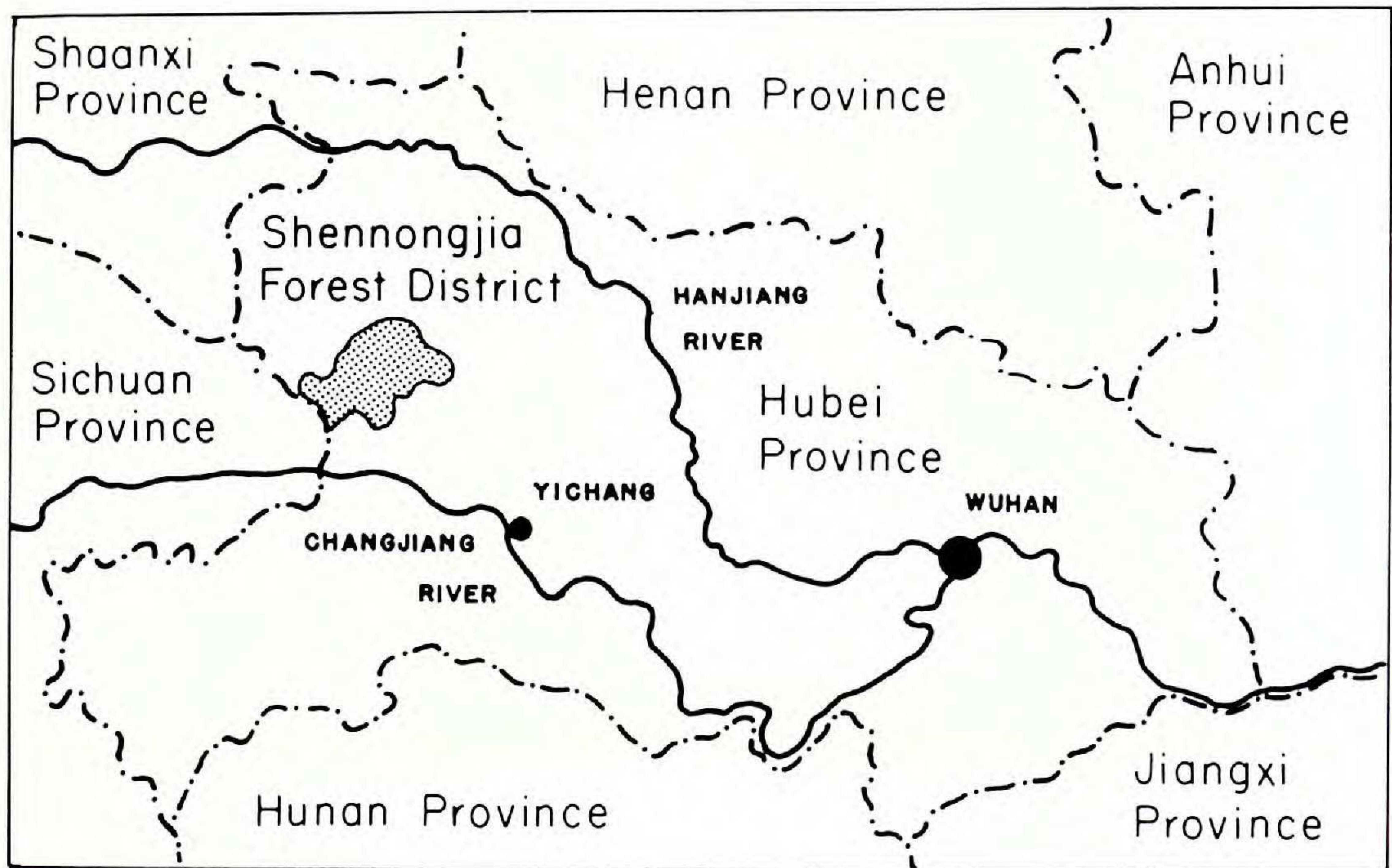
## NATURAL CONDITIONS IN THE SHENNONGJIA FOREST DISTRICT

**GEOGRAPHIC POSITION.** The Shennongjia Forest District (MAP 1), with an area of about 3250 km<sup>2</sup> (slightly larger than the state of Rhode Island, and almost exactly the same size as Yosemite National Park, in the United States), is situated at 31°15'–31°57' north latitude and 109°56'–110°58' east longitude. It lies in the northwestern part of Hubei Province and is bounded on the west by Sichuan Province. The district was created in 1970 from what were parts of Badong Xian (county), Xingshan Xian, and Fang Xian and was set off as a separate administrative division at the level of xian.

**GEOLOGY AND GEOMORPHOLOGY.** The Shennongjia Mountains are an extension of the southeastern Dabashan Mountain system, a subrange of the Wushan Mountains (Ying *et al.*, 1979). The region was gradually uplifted in the middle Devonian and was formed into a mountain body through the Yanshan, and then the Himalayan, mountain movements, with rising continuing after these movements. As a result of strong, constant erosion that kept pace with the

<sup>1</sup>The Pinyin system of romanization is used throughout except for names of older collectors, authors, and places for which changes in spelling might cause confusion. In these instances the Wade-Giles spelling is given in parentheses.





MAP 1. Outline of Hubei Province indicating location of Shennongjia Forest District (stippled).

uplift, the range appears young geologically, as evidenced by high mountains, deep valleys, and steep slopes (FIGURE 1). In some areas a karst topography has developed. The rock formation consists primarily of sedimentary rock (mainly Sinian siliceous limestone, Cambrian and Ordovician limestone and shale, Silurian calcareous shale, and Tertiary sandstone) interspersed with some metamorphic rock. Quaternary sediments are undeveloped.

The mountains in the Shennongjia Forest District are oriented in a nearly west-southwest to east-northeast direction and have an average elevation of around 1800 meters. The main mountain peaks are located slightly south of the central part of the district and include Laojun-shan (2936 m), Xiaoshennongjia (3005 m), Dashennongjia (3052 m), and Wuming Peak (3105 m), the highest in Shennongjia. However, the areas along the river valleys, such as along the Yangriwan and Yinyu-he rivers, are at an elevation of only several hundred meters. The altitudinal differences between these areas and the main peaks are usually more than 2000 meters. Many deeply incised, V-shaped valleys occur in Shennongjia, forming a radiate drainage pattern (see MAP 2), with the water flowing into the Changjiang (Yangtze) and Hanjiang (Han) rivers (the Songlo-he and Nicha-he rivers in the north and the Yinyu-he and Loyang-he rivers in the west flow into the Hanjiang; the Jiuchong-he and Dangyang-he in the southeast and the Yandu-he in the southwest flow into the Changjiang).

**CLIMATE.** Shennongjia is situated in a transitional area between the higher mountains of southwestern China and the low, hilly regions of the southeastern part of the country, and its climate is characteristic of an east-west transitional zone. It also lies in the path of monsoons moving north. Moreover, due to the topographical features of high, steep mountains and deeply incised valleys, the microclimates in the areas that we explored vary greatly, providing habitats





FIGURES 1, 2. Shennongjia Forest District: 1, view southwest from Xiaoshennongjia, ca. 3000 m alt., showing succession of mountain ridges, rough terrain, and steep topography of Forest District; 2, upper montane vegetation on Xiaoshennongjia, ca. 3000 m alt. (note thickets of *Sinarundinaria nitida* in right foreground; prominent conifer, *Abies fargesii*).



TABLE 1. Meteorologic data for Songbaizhen and Dajiuhu, Shennongjia Forest District.

| STATION &<br>ELEVATION | TEMPERATURE (°C) |                 |              |         |              | NO. OF<br>FROST-<br>FREE<br>DAYS<br>PER YEAR | ANNUAL<br>PRE-<br>CIPITA-<br>TION<br>(in mm) |
|------------------------|------------------|-----------------|--------------|---------|--------------|----------------------------------------------|----------------------------------------------|
|                        | Mean<br>annual   | Mean<br>January | Mean<br>July | Minimum | Maxi-<br>mum |                                              |                                              |
| Songbaizhen,<br>935 m  | 12.2             | 1.0             | 23.5         | -17.7   | 36.4         | 227                                          | 973.7                                        |
| Dajiuhu,<br>1700 m     | 7.4              | -4.9            | 18.5         | -21.2   | 34.5         | 144                                          | 1528.4                                       |

that range from warm temperate-subtropical at the lowest elevations to essentially boreal at the summits of the highest peaks. Weather stations were only recently established in this district, but there are not enough of them to provide detailed climatic data for much of the area. The data in TABLE 1 are based on meteorologic observations recorded at Songbaizhen (935 m alt.) and Dajiuhu (1700 m alt.) and made available by the Meteorologic Service of the Shennongjia Forest District.

Based on the available meteorologic data, the climate of Shennongjia appears to be warm temperate to temperate, with an abundance of moisture. There is far too little information from the areas along the river valleys at low elevations and from the highest peaks, but based on the distribution of the vegetation it is apparent that the lowest elevations support a few subtropical taxa while the highest elevations are occupied almost exclusively by boreal elements.

SOILS. There are three main types of soil, which are vertically distributed in Shennongjia (Ying *et al.*, 1979): a yellow-brown forest soil belt, a mountain brown forest soil belt, and a mountain gray-brown forest soil belt.

The yellow-brown forest soil belt is found at elevations below 1500 meters. The parent materials forming this soil are mostly purple and red arenaceous shale (pH 6-7). Organic materials are thoroughly decomposed due to the moisture/heat conditions and the wet and dry seasons.

The mountain brown forest soil belt occupies a position between 1500 and 2200 meters elevation. The parent materials are mainly limestone, micaceous sandstone, and quartz-containing sandstone (pH 4.5-6). This belt is densely covered with vegetation and has a rather good accumulation of humus.

The mountain gray-brown forest soil belt is located at elevations above 2200 meters. The parent materials are limestone and quartz-containing sandstone (pH 4.5-6.5). The organic layer is well developed.

FLORA AND VEGETATION. The floristic and vegetational characteristics of Shennongjia have been discussed to a greater or lesser extent by Peng (1957), Wu (1979, 1980), Ying *et al.* (1979), and Ban (1980). However, we would like to comment on aspects of the flora and vegetation in the areas that we visited.

Natural vegetation predominates over much of the area but is being altered



at an alarming rate. At lower elevations (generally below 1800 m) much of the natural vegetation has already been totally destroyed for timber or to provide crop land. Virgin forests are for all practical purposes nonexistent, although there are a few areas at middle elevations that support well-developed secondary forests containing a rich variety of tree species, and there are some relatively undisturbed coniferous forests at the highest elevations. Nevertheless, even these areas are being exploited at a rapid rate, and many steep slopes at middle and high elevations have been completely stripped of forest cover. This practice has led to serious erosional problems, which will definitely worsen as more areas are cut.

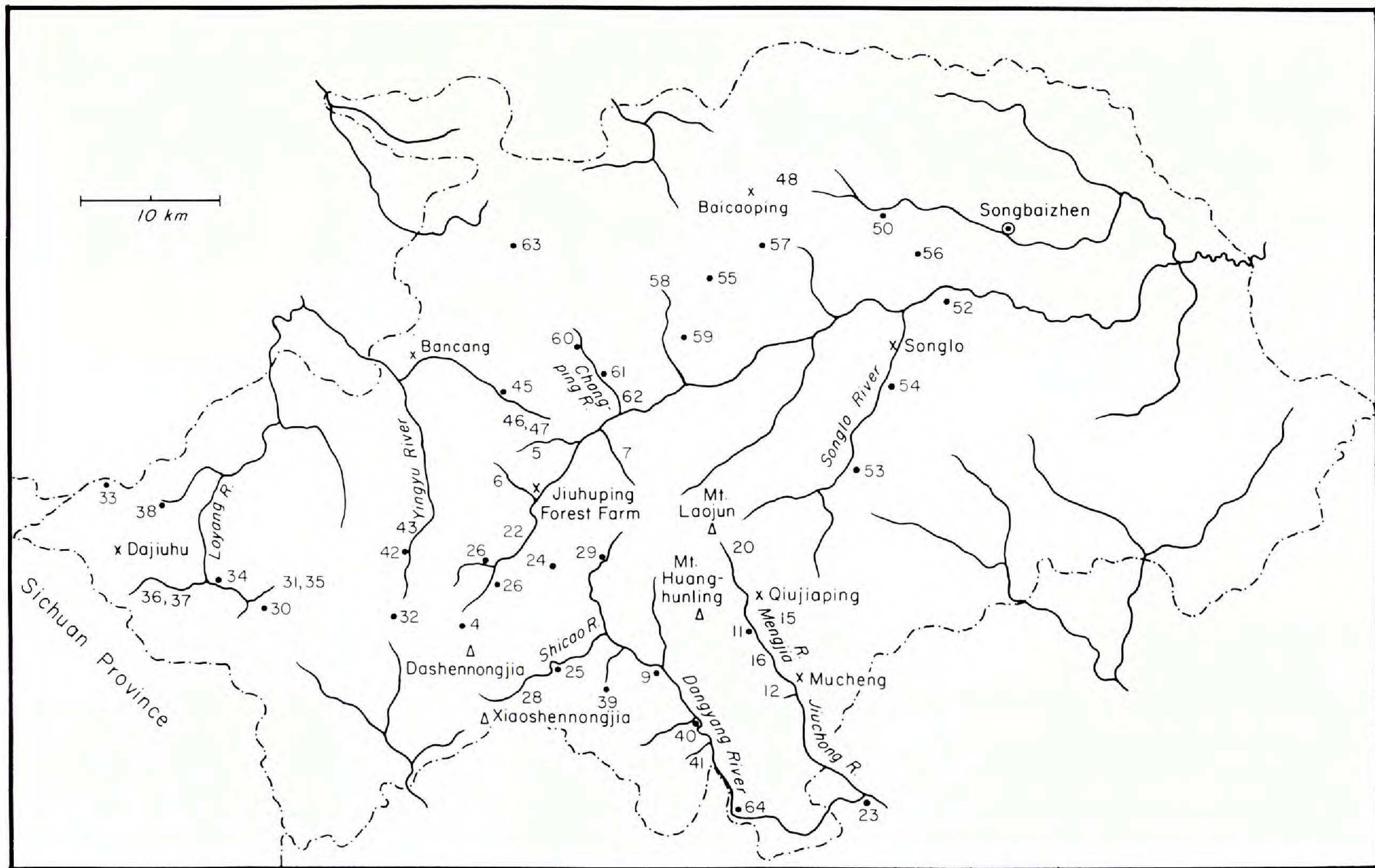
Coniferous forests are far less extensive than broad-leaved forests, due partly to the fact that coniferous forests that have been lumbered have mostly been replaced by broad-leaved ones. Except in certain areas at high elevations (e.g., on Mts. Laojunshan and Xiaoshennongjia; see FIGURE 2), pure, intact, coniferous forests are scarce.

Vertical zonation of the forests in Shennongjia is not easily observable. The original vegetation does not cover large areas, and it is difficult to distinguish the upper and lower boundaries of the various vegetation types. Some idea of the altitudinal zonation can be achieved by piecing together data from various parts of the district, but this may not reflect the true distribution of the original forest components (however, see Ying *et al.*, 1979).

The main vegetational patterns in Shennongjia can be classified into at least seven associations: evergreen broad-leaved forest, mixed evergreen and deciduous broad-leaved forest, dwarf bamboo thickets of *Sinarundinaria nitida* (FIGURE 3), deciduous broad-leaved forest (FIGURE 4), pine forest (either *Pinus armandii* or *P. massoniana*), boreal hardwood forest (consisting of *Betula* spp., *Sorbus* spp., *Acer* spp., and scattered gymnosperms, especially *Abies*), and fir forests (comprised almost exclusively of *Abies fargesii*). In addition, there are the different plant communities present in the subalpine-alpine meadows, the fens, and the marshes, as well as on the numerous vertical cliffs (FIGURE 5) located throughout the district.

The complex topography, the wide differences in climate, the geographic position, and the floristic history of the Shennongjia region have resulted in the development of a rich and varied flora (which includes a number of relict families, genera, and species) in the area. Based on Anonymous (1980) and additions to the flora collected during the 1980 Sino-American Botanical Expedition, the vascular flora comprises 2090 species in 786 genera and 166 families. Of these, 64 families and 307 genera are primarily represented in the tropics and subtropics, while 61 families and 304 genera belong to groups that are predominantly temperate in distribution. However, only 21 families and 98 genera are mostly restricted to the tropics, leaving subtropical and temperate groups as the major components of the flora. This breakdown by larger taxonomic groupings does not give a clear picture of the actual situation. Of the subtropical elements, most of the families and genera are represented by only one or a few species, while in the primarily temperate groups the genera and families are often represented by several to many species. Examples of these include *Dryopteris* (15 spp.), *Polystichum* (19 spp.), *Salix* (16 spp.), *Betula* (6





MAP 2. Shennongjia Forest District: collecting localities of the 1980 Sino-American Botanical Expedition. Numbers correspond to collection localities (see APPENDIXES 1, 2), dots show exact localities, numbers not associated with dots indicate collecting areas. Unnumbered collection localities are in vicinity of place names.





FIGURES 3, 4. Shennongjia Forest District: 3, *Sinarundinaria nitida* forming dense, impenetrable thickets at ca. 2650 m alt. at Banbiyon (rock formation characteristic of many areas of region); 4, Loyang River gorge near Pingqian at 1300 m alt. (forest on slopes above river composed largely of *Tsuga chinensis*, *Tetracentron*, *Cercidiphyllum*, *Acer robustum*, *Davidia*, *Pterocarya paliurus*, *Fagus* spp., and *Malus* sp.).



spp.), *Carpinus* (9 spp.), Ranunculaceae (63 spp.), *Sorbus* (8 spp.), *Cotoneaster* (13 spp.), *Acer* (18 spp.), *Rhododendron* (14 spp.), and *Viburnum* (17 spp.).

The flora of Shennongjia is more similar to those of eastern and northeastern China and Japan than to that of southwestern or southern China. Many genera extend from eastern Sichuan–western Hubei into eastern China and to Japan (Ying *et al.*, 1979). Examples of plants with this distribution pattern are *Pleurosoriopsis* (Pleurosoriopsidaceae); *Akebia* (Lardizabalaceae); *Deinanth*, *Rodgersia*, and *Schizophragma* (Saxifragaceae); *Paulownia* (Scrophulariaceae); *Weigela* (Caprifoliaceae); *Peracarpa* (Campanulaceae; extending to the Himalayas); *Euptelea* (Eupteleaceae); *Cercidiphyllum* (Cercidiphyllaceae); *Hosta*, *Reineckea*, *Tricyrtis*, and *Cardiocrinum* (Liliaceae); *Epimedium* (Berberidaceae); and *Aucuba* and *Helwingia* (Cornaceae; both extending to the Himalayas). In addition, many species in more widely ranging genera occur only in the region extending from central China to Japan.

A smaller number of genera are related to groups more characteristic of the Himalayan region or of regions more to the south or west. These include *Holboellia* and *Decaisnea* (Lardizabalaceae), *Brandisia* (Scrophulariaceae), *Streptolirion* (Commelinaceae; also extending to Korea), *Tupistra* (Liliaceae), and *Gastrochilus* (Orchidaceae).

Another group of plants in the Shennongjia Forest District includes those belonging to genera showing disjunct distribution between eastern Asia and eastern North America. Examples are *Matteuccia* (Onocleaceae), *Maclura* (Moraceae), *Caulophyllum* and *Diphylleia* (Berberidaceae), *Buckleya* (Santalaceae), *Antenoron* (Polygonaceae), *Liriodendron* (Magnoliaceae), *Illicium* (Illiciaceae), *Schisandra* (Schisandraceae), *Sassafras* (Lauraceae), *Stylophorum* (Papaveraceae), *Decumaria* and *Penthorum* (Saxifragaceae), *Pachysandra* (Buxaceae), *Acer* sect. NEGUNDO (Aceraceae), *Cryptotaenia* (Umbelliferae), *Lyonia* and *Vaccinium* sect. HUGERIA (Ericaceae), *Trachelospermum* (Apocynaceae), *Catalpa* (Bignoniaceae), *Phryma* (Phrymaceae), *Triosteum* (Caprifoliaceae), and *Aletris* (Liliaceae).

There are also a number of genera endemic to central, or central and southwestern, China (Li, 1953) that are represented in the flora of Shennongjia. Some of these are *Pteroceltis* (Ulmaceae), *Saruma* (Aristolochiaceae), *Tetracentron* (Tetracentraceae), *Asteropyrum* (Ranunculaceae), *Sargentodoxa* (Sargentodoxaceae), *Sinofranchetia* (Lardizabalaceae), *Eucommia* (Eucommiaceae), *Sinowilsonia*, *Sycopsis*, and *Fortunearia* (Hamamelidaceae), *Dipteronia* (Aceraceae), *Clematoclethra* (Actinidiaceae), *Davidia* (Nyssaceae, or Davidiaceae), *Dipelta* and *Kolkwitzia* (Caprifoliaceae), *Emmenopterys* (Rubiaceae), and *Ischnogyne* (Orchidaceae).

Continental glaciers did not encroach upon all of the Shennongjia region during the Quaternary (Li, 1940), and it is thought that this may have allowed a number of relict genera and families to survive there. However, it is also possible that many of these plants could have migrated southward during the Pleistocene, returning only after the climate warmed at the end of the last glaciation.



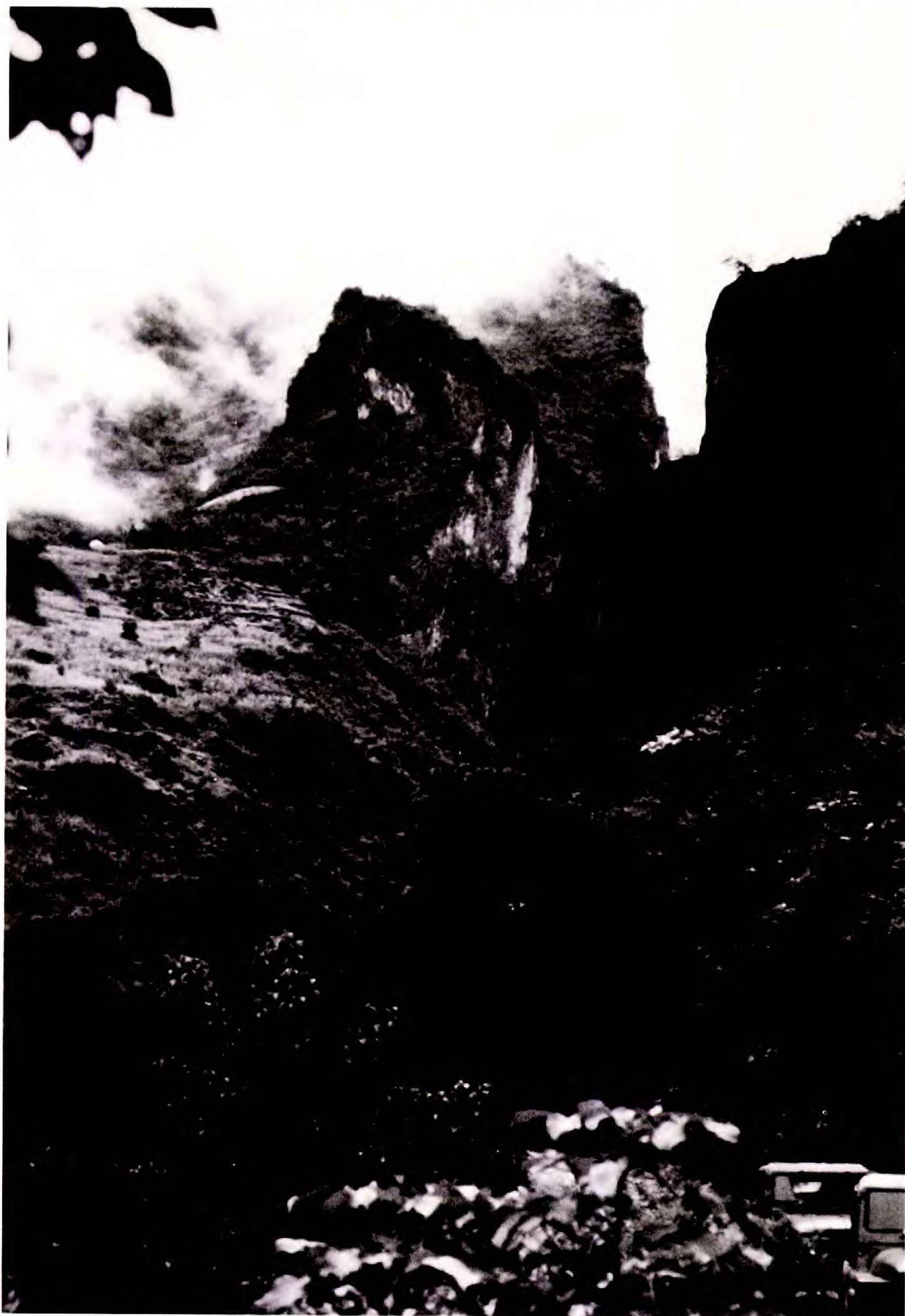


FIGURE 5. Shennongjia Forest District: steep, nearly vertical cliffs (ca. 400 m alt. at base) close to southern boundary of Forest District near confluence of Jiuchong and Dangyang rivers. Slopes support rich broadleaved-evergreen mixed deciduous forest association (but note corn field on slope at middle left).



## MAN'S INFLUENCE ON THE REGION

Since the Shennongjia Forest District contains some of the roughest terrain in Hubei Province, the vegetation has until recently remained unexploited. However, the demand for lumber and other forest products in the People's Republic has increased to the extent that even remote areas of the District are currently being made accessible. Areas at lower elevations and forests on moderate slopes had been largely lumbered prior to the 1980 expedition (FIGURE 6). In 1980 roads were in place, or under construction, into high mountain regions and areas of extremely rough topography; large tracts of forested land, including areas on the steepest slopes, were being clear-cut. The timber is removed from these sites by sliding the logs down the steep slopes to collecting and loading areas, resulting in serious erosion. Cables suspended across valleys facilitate removal of logs from more inaccessible locations. From collection points the timber is transported by truck to larger collection depots, or "forest farms" (for example, our primary base camp was Jiuhuping Forest Farm; see MAP 2), where some of the logs are cut into boards for local use. Most of the logs, however, are taken to the Changjiang (Yangtze) River for transport as giant rafts downstream to eastern China, where the timber is processed for use.

Although our party was unable to visit all areas of the Shennongjia Forest District, and although none of us professes a thorough knowledge of forestry, we were nonetheless struck by the alarming rate at which both lumbering and preparation for future cutting were progressing. If cutting continues at the present rate, it might be roughly estimated that the forests of the district will be depleted of useful timber within a ten-year period. Of equal concern was the apparent waste evident in the lumbering process, the general disregard for the vegetation as a whole (through clear-cutting and the log slides), and the apparent lack of reforestation. In 1980 many of the areas that had been lumbered were under cultivation in food crops, and it was incredible to observe corn "fields" on slopes at angles greater than 45°. The yield in these fields is very low: in many areas the stalks produce no ears or only a single one. It is obviously very expensive to remove timber from the district. If this is to remain as a major timber-producing region, the expansion of the human population into the lumbered areas—especially those more readily accessible at low elevations, where the yields could potentially be greatest—should be strongly discouraged. The middle and higher elevations should remain unpopulated since the land there appears unsuitable for agriculture. Reforestation of lumbered areas, both to prevent extensive erosion and to provide a more continuous yield of forest products, should be the first priority in the district. Altered lumbering procedures would also allow for natural reforestation with native species. The members of the 1980 expedition hope that man's presence in the district will be limited, and that steps will be taken to preserve representative vegetational areas within the area before they are completely destroyed.



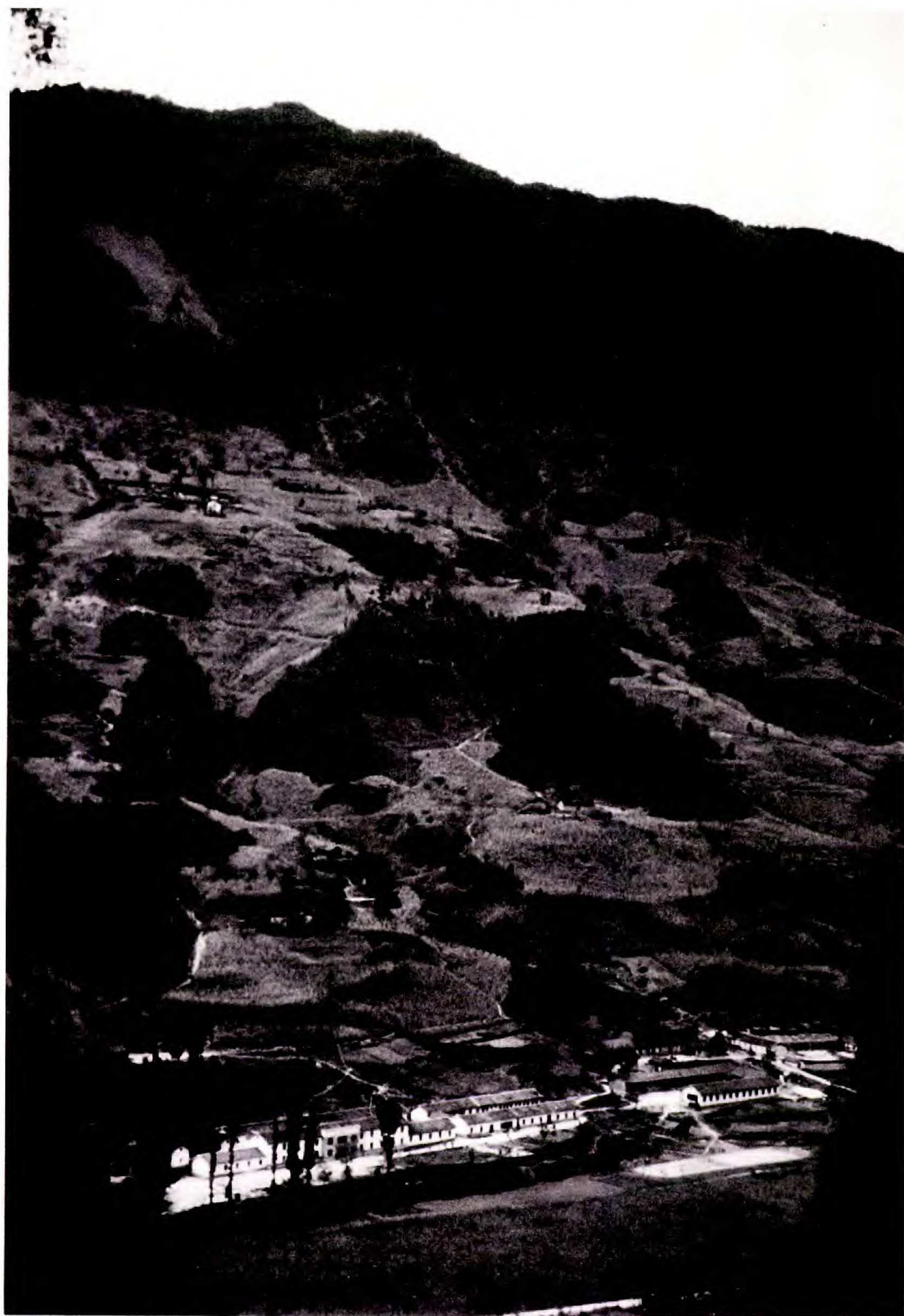


FIGURE 6. Shennongjia Forest District: Songlo Commune along the Songlo River at 1000 m alt. Lower- and middle-elevation slopes above commune buildings largely denuded of native vegetation and planted in corn; small groves of *Pinus massoniana* also planted for timber. Slender trees in front of commune, *Cunninghamia lanceolata*, with lateral branches pruned for firewood.



PREVIOUS BOTANICAL EXPLORATION IN THE SHENNONGJIA  
FOREST DISTRICT AND LICHUAN XIAN

So far as can be determined, the first botanical collections from within the region that now constitutes the Shennongjia Forest District were made by Augustine Henry, an Irish physician and botanist, during the period 1882–1889, when he was stationed as an officer of the Chinese Imperial Maritime Customs Service in Yichang (Ichang). Some of Henry's collections from the district were probably made by Chinese collectors in his employ, since his own collecting activities were initially concentrated within a ten- to fifteen-mile radius of Yichang (Bretschneider, 1898). However, in July of 1888, Henry made a trip to Baokang Xian (Paokang Hsien), Fang Xian, and Wushan Xian. In a letter to the director of the Royal Botanic Gardens, Kew, Henry recounted that on that journey he "... travelled due north from Ichang till I reached the range separating the basins of the Yangtze and Han Rivers, and then I made my way along the ranges westwards as far as Szechuan, striking then the Yangtze on the Hupeh-Szechuan boundary line I returned two or three days ago by boat down the rapids. . . . I reached at one point about 10,000 feet altitude, and found the mountains from 8,000 to 10,000 feet rich in plants not previously sent. . . . No foreigner, not even the Roman Catholic missionaries, had ever been in these parts before . . ." (Henry *in* Thiselton-Dyer, 1889, p. 226). From these excerpts of the letter as well as from some of the plants he mentioned, it is apparent that Henry had traveled across what is now part of the Shennongjia Forest District.

The second botanist to visit the region was E. H. Wilson, an English plant explorer, who began to collect in western Hubei and eastern Sichuan provinces early in 1900. Altogether, Wilson made four expeditions in China, the first two in the employ of the Veitch nursery firm of Chelsea, England, and the latter two under the auspices of the Arnold Arboretum (see Howard, 1980). The first two years of Wilson's initial expedition were spent exploring the mountains of western Hubei, and to judge from the map Wilson published of his itinerary (Wilson, 1905; see also Clausen & Hu, 1980), there is evidence that he also penetrated the Shennongjia region. Moreover, in his *A Naturalist in Western China* Wilson (1913) described in some detail a trip undertaken from Yichang to Daning (Taning) in Sichuan during the fourth expedition. Leaving Yichang on 4 June 1910 and traveling via Xingshan Xian, Wilson journeyed to Qingtianpao (Chin-tien-po), Xiaolongtan (Hsao-lung-tan), Dalongtan (Ta-lung-tan), and Dajiuhu (Ta-chu-hu), reaching Daning in 22 days. All four of these intermediate locations are today within the Shennongjia Forest District.

Although both Henry and Wilson undoubtedly prepared herbarium specimens of many of the plants they encountered while in the Shennongjia Forest District, the label data on their specimens are usually inadequate for pinpointing exact locations. As a result, it is usually impossible (particularly with Henry's specimens) to determine if a particular collection was made in the Shennongjia region.

The first Chinese botanists to collect in the Forest District were W. Y. Chun,



S. S. Chien, and R. C. Ching. These botanists left Yichang in July, 1922, and traveled via Wan-chao-shan (Wan-tsao-shan) in western Xingshan Xian to Xiaolongtan and Jiucayazi. Their two-month journey yielded more than 1000 numbers, but the most complete set was destroyed by fire in 1924 (R. C. Ching, pers. comm.). Some of the duplicate collections were distributed, however, and are in the herbaria of Nanjing University (N), the Institute of Botany, Beijing (PE), the Arnold Arboretum (A), and the United States National Herbarium (US). Likewise, a collection of nearly 3000 numbers made by Y. Chen in 1926 may include specimens from the Shennongjia Forest District, but since his field notes are missing it is impossible to determine exact localities for these specimens, which are deposited in the herbaria of Nanjing University (N) and Nanjing Technical College of Forest Products (NF).

In July and August of 1943, a forest survey was undertaken in the Shennongjia region and additional herbarium specimens were collected. It is of historical interest that C. Wang (T. Wang or Wang Zhan) participated in this survey and then undertook a side trip to Wan Xian (Wan Hsien) and Modaoqi (Mo-tao-chi), where he was the first botanist to collect specimens of *Metasequoia glyptostrobooides*.

Subsequent to the early activities in the Shennongjia region in the 1920's and early 1940's, extensive botanical collections were made in the 1950's and particularly during the period 1976–1978 by the Shennongjia Plant Resources Expeditions. The participants of these expeditions analyzed the vegetation and plant resources of the region and collected more than 10,000 numbers (Anonymous, 1980). These collections, although distributed widely in herbaria throughout China, are deposited primarily in the herbaria of the Wuhan Institute of Botany (HIB) and the Institute of Botany, Beijing (PE).

The history of botanical exploration in Lichuan Xian, where *Metasequoia glyptostrobooides* was discovered as an extant plant, has been summarized by Hu (1980) in her paper concerning the flora associated with *Metasequoia* and is outlined briefly by Bartholomew, Boufford, and Spongberg (1983). Among the more recent Chinese collectors to visit this area are C. Wang, C. Y. Hsüeh, C. T. Hwa, K. L. Chu, W. C. Cheng, and Y. W. Djou. Prior to the American scientists on the present expedition, the last ones to visit the region were R. W. Chaney and J. L. Gressitt, whose activities in the area were prompted by the discovery of *Metasequoia*.

As far as can be determined, the American participants in the 1980 Sino-American Botanical Expedition to western Hubei were the first Western botanists to collect in the Shennongjia Forest District since the days of E. H. Wilson, and in the metasequoia area of Lichuan Xian since Chaney and Gressitt. Although the activities of Chinese botanists have greatly increased our knowledge of the floras of both regions (Anonymous, 1976, 1979, 1980), it is significant that 15 taxa new to science (13 new species, 1 variety, and 1 forma) are proposed as a result of the 1980 expedition, and that numerous taxa from both Shennongjia and the metasequoia region are recorded from these areas for the first time. Although it can safely be said that the flora of western Hubei is relatively well known, our knowledge still remains incomplete.



## ACKNOWLEDGMENTS

We would like to express our gratitude and thanks to the many people, too numerous to mention, who gave freely of their time and advice in the planning and execution of the expedition, as well as to those who helped to prepare this report. Primary responsibility for this paper is shared by D. E. Boufford and S. A. Spongberg, who either wrote or edited sections of the manuscript prepared by Chinese and American participants. In China S. C. Sun and Y. C. Tang rendered similar service. Our thanks are also expressed to C. Z. Ji, who skillfully prepared the illustrations of the new taxa of pteridophytes. The help of M. Byrnes in the preparation of the manuscript and of E. B. Schmidt in its editing is also gratefully acknowledged.

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Major funding for the expedition was provided by the Academia Sinica, while a grant (#2133-80) from the National Geographic Society to the American participants provided for transportation to and from China and for field equipment. Additional support to the American participants provided by members of the American Association of Botanical Gardens and Arboreta allowed for essential follow-up activities once the expedition had been completed. This financial support is gratefully acknowledged.

AN ENUMERATION OF THE VASCULAR PLANTS COLLECTED  
ON THE 1980 SINO-AMERICAN BOTANICAL  
EXPEDITION TO WESTERN HUBEI

The following annotated list represents the determinations of the vascular plants collected both in the Shennongjia Forest District (numbers 1–1924) and



in the metasequoia region of Lichuan Xian (numbers 1925–2085). Numbers between 1 and 2085 not represented in this list were assigned to nonvascular plants that will be detailed elsewhere. Names followed by an asterisk indicate taxa previously unreported for the Shennongjia Forest District, based on *Shennongjia Plants* (Anonymous, 1980).

Determinations of the collections were undertaken by both American and Chinese participants of the expedition, and lists of determinations were exchanged for comparison as the work progressed. Discrepancies were evaluated in herbaria in both the People's Republic of China and the United States until agreement was reached. In the few instances where we were unable to make satisfactory determinations, specific epithets have been omitted. Working at the Harvard University Herbaria (A and GH), D. E. Boufford and S. A. Spongberg took primary responsibility for the identifications of the expedition materials in the United States. T. R. Dudley provided determinations for *Ilex* and *Viburnum* and assisted with additional genera, while B. Bartholomew identified the specimens of *Camellia*. The assistance of L. Constance (Umbelliferae), K. Flinck (*Cotoneaster*), L. Garay (Orchidaceae), I. Hay (Gymnospermae), T. Koyama (Juncaceae, Cyperaceae), E. Landolt (*Lemna*), H. W. Li (certain Labiatae), E. McClintock (*Hydrangea*), P. O'Connor (Gramineae), P. H. Raven (*Epilobium*), and B. G. Schubert (*Begonia*, *Dioscorea*, and certain Leguminosae) is also gratefully acknowledged.

Primary responsibility for identifications in the People's Republic of China was assumed by Z. Cheng, at the Wuhan Institute of Botany, and Y. C. Tang and T. S. Ying, Institute of Botany, Beijing. R. C. Ching and K. H. Shing kindly studied the pteridophytes, while T. T. Yü, L. T. Lu, and T. C. Ku examined the specimens of Rosaceae, R. H. Shan examined the Umbelliferae, and A. L. Chang studied the Ericaceae.

Prior to the departure of the American participants from China, the herbarium material, as well as the germ-plasm collections, was divided equally between the Chinese and American teams. A complete set of the 1980 Sino-American Botanical Expedition specimens of vascular plants (1715 numbers) is at HIB, and the second most complete set (1695 numbers) is at A; specimens beyond these two sets were divided more or less equally between the institutions of the participants (CM, 1413 numbers; KUN, 1431; NA, 1441; NAS, 1466; NY, 1433; PE, 1605; SFDH, 1309; UC, 1489; and WH, 1199). Specimens in addition to the sets deposited in the institutions of the American participants have been sent as gifts to the Royal Botanic Garden, Edinburgh (E, 872 numbers), the Department of Botany, Kyoto University (KYO, 454 numbers), and the Missouri Botanical Garden (MO, 173 numbers). Unfortunately, a portion (approximately 200 sheets) of the herbarium specimens allotted to the American team inexplicably disappeared after their safe arrival in the United States and after the determinations had been completed, resulting in less complete sets than would have otherwise been possible.

In an attempt to make the following enumeration of greater value than a mere floristic listing, we have appended brief notes where we found taxonomic or nomenclatural problems during the identification process. It is hoped that these notes will stimulate further investigations that will ultimately help clarify



problems in the systematics of these central Chinese plants. Acronyms of the herbaria (following Holmgren, Keuken, & Schofield, 1981, with the exception of the Shennongjia Forest District Herbarium, abbreviated SFDH) where the specimens are deposited are given for each collection number. Also, literature citations of original descriptions are provided for names not appearing in *Index Kewensis* or its *Supplements*, or in *Index Filicum* or its *Supplements*. APPENDIXES 1 and 2 provide a cross-reference to collection numbers and exact collecting localities, the elevation of each site, and the collection date. The collecting localities are indicated on MAP 2.

PTERIDOPHYTA<sup>2</sup>

## LYCOPODIACEAE

- Huperzia crispata* (Ching) Ching, Acta Bot. Yunnanica **3**: 293. 1981. (syn.: *Lycopodium crispatum* Ching, Acta Phytotax. Sinica **18**: 236. 1980.) 1974 (A, HIB).  
*Huperzia hupehensis* Ching\*, Acta Bot. Yunnanica **3**: 301. 1981. 1386 (A, HIB, PE, UC).  
*Lycopodium obscurum* L. 768 (A, HIB, NY, PE, UC).

## SELAGINELLACEAE

- Selaginella involvens* (Sw.) Spring 624 (A, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1360 (A, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).  
*Selaginella labordei* Hieron. 218 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 330 (A, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1080a (A, NA, UC); 1593 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1691 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).  
*Selaginella moellendorffii* Hieron. 1080 (A, HIB, KUN, NA, NAS, PE, SFDH, WH).  
 Collection no. 1080 represents a mixed collection, part of which (no. 1080a) is *Selaginella labordei* Hieron. Some of the specimens cited here as *S. moellendorffii* in the Chinese herbaria may belong to that species.  
*Selaginella nipponica* Makino 845 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).  
*Selaginella uncinata* (Desv.) Spring\* 1117 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

## EQUISETACEAE

- Equisetum arvense* L. 1874 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).  
*Equisetum hyemale* L. 141 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

<sup>2</sup>The systematic arrangement of the families of Pteridophyta follows Ching (1978).



*Equisetum ramosissimum* Desf.

435 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

#### BOTRYCHIACEAE

*Botrychium strictum* Underw.

503 (HIB); 540 (HIB); 1686 (A, HIB, PE, UC).

#### HYMENOPHYLLACEAE

*Hymenophyllum barbatum* v. d. Bosch

2023 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

#### DENNSTAEDTIACEAE

*Dennstaedtia pilosella* (Hooker) Ching\* (distributed as *Dennstaedtia hirsuta* (Hooker) Ching)

854 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Dennstaedtia wilfordii* (Moore) Christ

563 (A, CM, HIB, KUN, NAS, NY, PE, SFDH, UC, WH); 1760 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Microlepia marginata* (Houtt.) C. Chr.

2052 (A, HIB, NAS, PE, UC).

#### HYPOLEPIDACEAE

*Hypolepis punctata* (Thunb.) Mett.

1943 (A, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1944 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

#### LINDSAEACEAE

*Stenoloma chusana* (L.) Ching (syn.: *Sphenomeris chusana* (L.) Maxon)

2036 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

#### PTERIDACEAE

*Pteridium revolutum* (Blume) Nakai

674 (A, CM, E, HIB, KUN, KYO, NAS, NY, PE, SFDH, UC, WH); 1673 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pteris excelsa* Gaudich.\*

1432 (A, CM, HIB, KUN, NAS, NY, PE, SFDH, UC); 1898 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Pteris nervosa* Thunb.

495 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1654 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, WH).

*Pteris vittata* L.

1118 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1437 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pteris wallichiana* Agardh

2026 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).



SINOPTERIDACEAE

*Aleuritopteris duclouxii* (Christ) Ching\* (syn.: *Cheilanthes duclouxii* (Christ) Ching)

1674 (A, HIB, PE).

*Aleuritopteris farinosa* (Forsk.) Fée\* (syn.: *Cheilanthes farinosa* (Forsk.) Kaulf.)

1754 (A, HIB).

***Cheilsoria chusana*** (Hooker) Ching, comb. nov.

BASIONYM: *Cheilanthes chusana* Hooker, Sp. Fil. 2: 95. t. 106B. 1852.

1600 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Leptolepidium kuhnii* (Milde) Hsing & S. K. Wu\*, Acta Bot. Yunnanica 1(1):

117. 1979. (syn.: *Cheilanthes kuhnii* Milde)

1769 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Onychium ipii* Ching\*

1599 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Onychium japonicum* (Thunb.) Kunze

2051 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Onychium moupinense* Ching

545 (A, HIB).

ADIANTACEAE

*Adiantum capillus-veneris* L.

1915 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Adiantum davidii* Franchet\*

1357 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Adiantum edentulum* Christ\*

327 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 590 (A, CM, HIB, KUN, NA, NY, PE, SFDH, UC); 1767 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Adiantum erythrochlamys* Diels\*

326 (A, HIB, PE, UC); 497 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1712 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Adiantum myriosorum* Baker

552 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Adiantum pedatum* L.

1295 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1755 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1819 (A, HIB).

HEMIONITIDACEAE (GYMNOGRAMMACEAE)

*Coniogramme caudiformis* Ching & Shing\*, Acta Bot. Yunnanica 3: 233. 1981. (distributed as *Coniogramme caudifrons* Ching)

496 (A, HIB, NA, NAS, PE, UC); 1435 (A, CM, HIB, NA, NAS, PE, UC).

*Coniogramme intermedia* Hieron.

504 (A, HIB, NAS, PE, UC); 1446 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).



*Coniogramme robusta* Christ (distributed as var. *repandula* Ching, apparently an unpublished name)

2049 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

#### ATHYRIACEAE

*Allantodia okudairai* (Makino) Ching\*, Acta Phytotax. Sinica 9: 49. 1964.

1711 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Allantodia squamifera* (Mett.) Ching\*, Acta Phytotax. Sinica 9: 55. 1964.

321 (A, CM, HIB, NAS, PE, UC); 1237 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

#### **Athyrium amplissimum** Ching, Boufford, & Shing, sp. nov.

Species proxime affinis *Athyrium multifido* Rosenst., Japoniae, sed in statura multo majore, stipite virescente (nec purpurascente), pinnis pinnulis multo majoribus, et pinnis breviter petiolatis differt.

Plants ca. 80 cm tall. Rhizome short, erect. Stipe ca. 35–40 cm long, 4 mm in diameter, stramineous, glabrous above base, which is covered with light brown, lanceolate scales; lamina ample, 40–45 cm long, to 40 cm wide, ovate, acuminate at apex, broadly rounded at base, tripinnate; pinnae ca. 13 pairs, lower ones nearly opposite but becoming alternate upward, rather closely spaced, sessile, oblong-lanceolate, acuminate to truncate base, subsessile, the basal pair nearly as large as those next above, ca. 20 cm long, 8–9 cm wide above narrowed base, bipinnate; pinnules ca. 25 pairs, spreading at right angles to rachis, sessile, lanceolate, acuminate at apex, subrounded at base, the longest ones 4 by 1.2 cm, the basal pair much reduced, ca. 1.2 cm long, pinnate; ultimate segments up to 15 pairs, oblong, 6 by 1.6 mm, with few teeth along margin. Fronds herbaceous, drying green, rachis and rachilets glabrous. Sori large, subrounded to oblong, 3 to 5 per segment, close; indusium small, fugaceous.

TYPE. China, western Hubei Province, Shennongjia Forest District (31°30'N, 110°30'E), vicinity of Dalongtan and Xiaolongtan on the W side of the road, elevation 2300–2600 m, 9 September 1980, *Sino-Amer. Bot. Exped.* 914 (holotype, PE; isotypes, A, CM, E, HIB, KUN, KYO, NA, NAS, NY, SFDH, UC, WH).

ADDITIONAL SPECIMENS EXAMINED. **China.** HUBEI: Shennongjia Forest District (31°30'N, 110°30'E), mixed deciduous-coniferous-bamboo forest remnant at Chuifeng Pass, ca. 3000 m, fronds tufted from erect rhizomes, 1980 *Sino-Amer. Bot. Exped.* 49 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); vic. of Xiaojiuhu, ca. 2000 m, semiopen, moist slope in *Quercus* forest, fronds tufted from erect rhizomes, stipes green or brownish, 1980 *Sino-Amer. Bot. Exped.* 1348 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

Somewhat similar to *Athyrium multifidum* Rosenst., but differing in being much larger and in having green (not purplish) stipes, much larger pinnae and pinnules, and pinnae with shorter petioles.



*Athyrium epirachis* (Christ) Ching

2011 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Athyrium fallaciosum* Milde\*

1768 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Athyrium filix-femina* (L.) Roth.\*

351 (A, CM, HIB, KUN, NA, NAS, PE, UC).

*Athyrium mackinnonii* (Hope) C. Chr.\*

320 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Athyrium vidalii* (Franchet & Sav.) Nakai\*

333 (A, HIB, KUN, PE, UC); 2053 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Athyrium wardii* (Hooker) Makino\*

542 (A, HIB, KUN, NAS, PE, UC).

*Athyrium* sp. (distributed as *A. deflexum* Ching, apparently an unpublished name)

1876 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Dryoathyrium dielsii* (C. Chr.) Ching\*

544 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1091 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Dryoathyrium henryi* (Baker) Ching

588 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC); 620 (HIB); 621 (HIB); 1000 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Dryoathyrium okuboanum* (Makino) Ching\*, Acta Phytotax. Sinica 10: 303. 1965.

706 (A, HIB, KUN, NA, NY, PE, UC).

*Dryoathyrium unifurcatum* (Baker) Ching\*

1434 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

***Lunathyrium shennongense* Ching, Boufford, & Shing, sp. nov.**

Species insignis, adspectu *Lunathyrium vermiformi* Ching, Boufford, & Shing proxime affinis, sed in stipite rachidique subtus glabris supra in sulco pilis minutis septatis sparsis praedito, costis pinnarum subtus similiter sparse villosis, segmentis angustioribus, sinubus latis, indusiis brevioribus latioribusque subconchatis cinereis membranaceis marginibus erosis (indusiis in pinnis supremis plerumque hippocrepiformibus), differt.

Plants to 70 cm tall. Stipe 12 cm long, 2.2 mm in diameter, pale-stramineous, bisulcate on upper side, scaly at base, glabrous upward; lamina oblanceolate, to 60 cm long, 15 cm wide at middle, acuminate at apex, gradually narrowed toward base, which is ca. 5 cm wide; pinnae ca. 22 pairs, patent, the lower ones separated by broad intervals, the basal pair 3–4 cm long, somewhat deflexed, the middle ones 10 cm long, 1.8 cm wide at base, sessile or subsessile, lanceolate, acuminate at apex, truncate at base, pin-natipartite; segments ca. 22 pairs, spreading at right angles to costa, ca. 7 mm long, 3 mm wide at base, oblong, obtuse at apex, entire; veins 6 or 7 pairs in each segment, simple. Fronds drying green, glabrous except for costa on undersurface of pinnae, which has few fine, septate hairs, these more



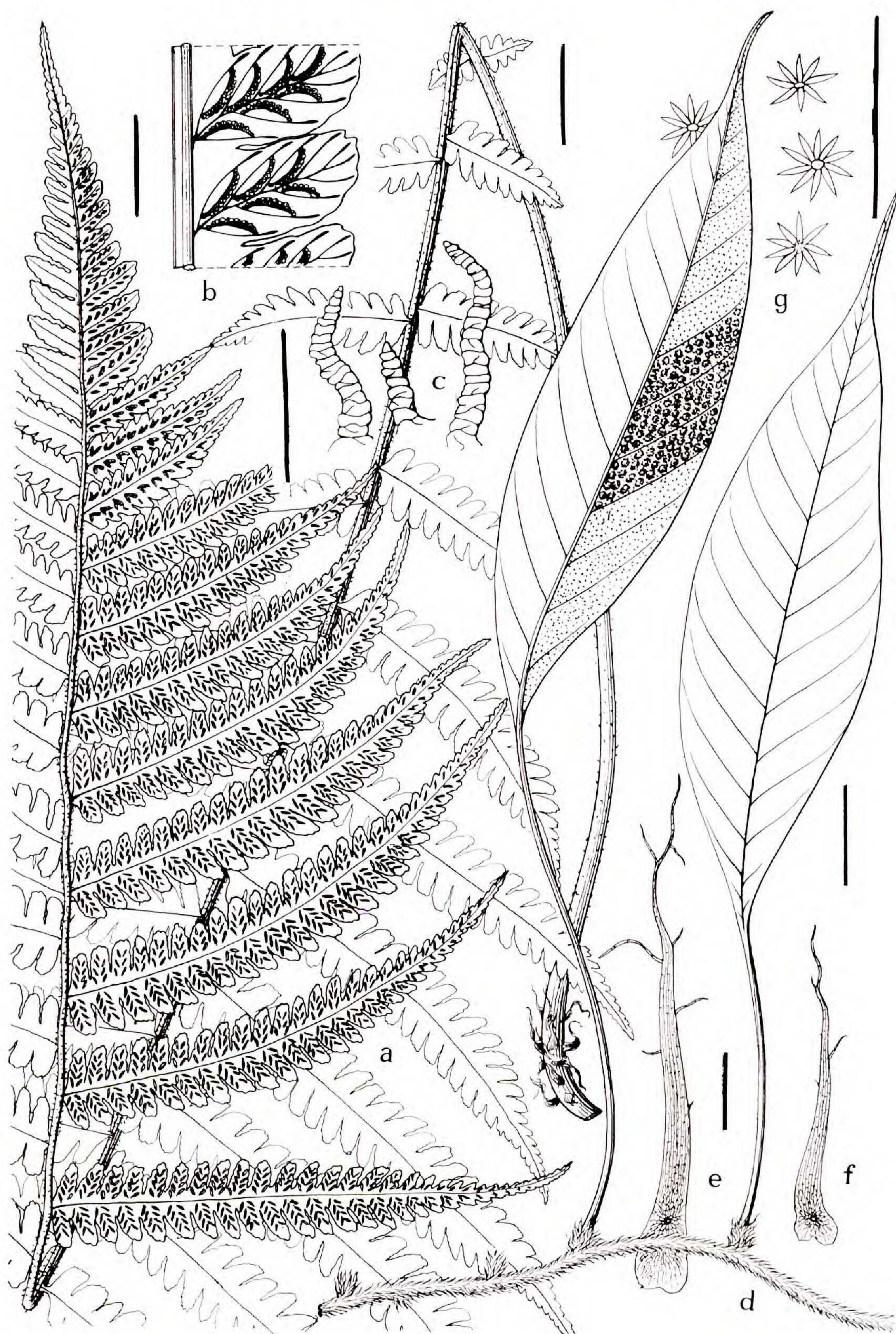


FIGURE 7. a–c, *Lunathyrium vermiforme*: a, frond (bar = 2 cm); b, portion of pinna with sori (bar = 5 mm); c, setae from rachis (bar = 1 mm). d–g, *Pyrrosia caudifrons*: d, fronds and rhizome (bar = 2 cm); e, f, scales from rhizome (bar = 1 mm); g, stellate hairs from undersurface of lamina (bar = 1 mm).



dense on upper surface of rachis. Sori oblong, contiguous, 4 or 5 pairs per segment; indusium subconchoidal (those on uppermost pinnae generally horseshoe shaped), gray, membranous, margin erose.

TYPE. China, western Hubei Province, Shennongjia Forest District (31°30'N, 110°30'E), vicinity of Chuifeng Pass, elevation ca. 2700 m; openings in bamboo thickets, fronds with erect rhizomes, 26 August 1980, *Sino-Amer. Bot. Exped.* 353 (holotype, PE; isotypes, A, CM, HIB, KUN, KYO, NA, NAS, NY, SFDH, UC, WH).

Although *Lunathyrium shennongense* resembles *L. vermiforme* Ching, Boufford, & Shing morphologically, it differs in having a stipe and rachis that are glabrous beneath and sparsely hairy with fine, septate hairs in the groove on the upper side (the costa on the undersurface of the pinnae also has a few similar hairs), segments that are narrower with broader sinuses, and short, broad, subconchoidal, membranous, ash-gray indusia with erose margins.

***Lunathyrium vermiforme* Ching, Boufford, & Shing, sp. nov. FIGURE 7, a–c.**

Species e turma *Lunathyrium giraldii* (Christ) Ching, sed in pinnis inferioribus minus abbreviatus, rachidibus omnino setis crassis vermiformibus copice praeditis, pinnis majoribus, differt.

Plants to 74 cm tall. Rhizome short, erect; fronds fasciculate. Stipe ca. 20 cm long, 2 mm in diameter, dark-stramineous, glabrous above base, which is covered with dark brown. lanceolate scales; lamina elliptic-lanceolate, 55 cm long, 18 cm wide at middle, acuminate at apex, gradually narrowed toward base, bipinnatipartite; pinnae ca. 20 pairs, patent, separated by narrow intervals, the lower widely separated, the lowest 4 pairs abbreviated, the basal pair auriculate, ca. 1 cm long, the middle ones to 10 cm long, 1.6 cm wide at truncate base, lanceolate, slightly falcate, acuminate at apex, pinnatipartite to narrow wing along costa; segments ca. 20 pairs, close, oblong, ca. 7 by 4 mm, entire, apex obliquely truncate or subrounded. Fronds herbaceous, drying green, pinnae glabrous on both sides, rachis covered throughout with thick, pale setae. Sori linear, extending from midrib to near margin, indusia linear, entire, straight throughout, well spaced.

TYPE. China, western Hubei Province, metasequoia region of Lichuan Xian (30°10'N, 108°45'E), vicinity of Zhuanjiaowan on the E side of the valley, elevation ca. 1500 m, 7 October 1980, *Sino-Amer. Bot. Exped.* 2025 (holotype, PE; isotypes, A, CM, HIB, KUN, KYO, NA, NAS, NY, SFDH, UC, WH).

*Lunathyrium vermiforme* is related to *L. giraldii* (Christ) Ching of the same region but differs in having larger pinnae, with the lower ones less abbreviated, and the rachis covered throughout with numerous thick setae.

*Lunathyrium wilsonii* (Christ) Ching, *Acta Phytotax. Sinica* **9**: 71. 1964. 2048 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).



*Lunathyrium* sp. (mistakenly identified and distributed as *Lunathyrium centro-chinense* Ching)

1239 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pseudocystopteris atkinsonii* (Bedd.) Ching, Acta Phytotax. Sinica 9: 78. 1964.

322 (A, HIB, UC); 909 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1238 (A, HIB, UC).

*Pseudocystopteris longipes* (Christ) Ching\*, Acta Phytotax. Sinica 9: 78. 1964.

46 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 873 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

#### THELYPTERIDACEAE

*Cyclosorus acuminatus* (Houtt.) Nakai (syn.: *Thelypteris acuminata* (Houtt.) Morton)

1104 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Macrothelypteris oligophlebia* (Baker) Ching, Acta Phytotax. Sinica 8: 309. 1963, var. *elegans* (Koidz.) Ching, *ibid*.

1436 (A, HIB, NA, PE, UC).

*Parathelypteris nipponica* (Franchet & Sav.) Ching, Acta Phytotax. Sinica 8: 302. 1963. (syn.: *Thelypteris nipponica* (Franchet & Sav.) Ching)

306 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Phegopteris decursive-pinnata* (Van Hall) Fée (syn.: *Thelypteris decursive-pinnata* (Van Hall) Ching)

246 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1433 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 2047 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Phegopteris polypodioides* Fée\* (syn.: *Thelypteris phegopteris* (L.) Slosson ex Rydb.)

913 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pronephrium penangiana* (Hooker) Holttum (syn.: *Abacopteris penangiana* (Hooker) Ching)

492 (A, CM, HIB, KUN, NAS, PE, UC); 1116 (A, HIB, NAS, NY, PE, UC).

*Pseudophegopteris pyrrorachis* (Kunze) Ching\*, Acta Phytotax. Sinica 8: 315. 1963.

758 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Thelypteris subochthodes* (Ching) Ching\* (distributed as *Pseudocyclosorus tsoi* Ching)

1946 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

#### ASPLENIACEAE

*Asplenium incisum* Thunb.

1692 (HIB).

*Asplenium sarelii* Hooker

328 (A, HIB); 430 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Asplenium trichomanes* L.

760 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1448 (A, HIB, UC).



No. 760 was distributed as *Asplenium trichomanes* L. subsp. *orientale* Lovis.

*Asplenium tripteropus* Nakai

2046 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Asplenium unilaterale* Lam.

1920 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

#### PLEUROSORIOPSISIDACEAE

*Pleurosoriopsis makinoii* (Maxim.) Fomin\*

1296 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

#### ONOCLEACEAE

*Matteuccia intermedia* C. Chr.

23 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Matteuccia orientalis* (Hooker) Trev.

720a (A, CM, NA, UC); 1890 (A, HIB); 2050 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

Collection no. 720 originally represented a mixed collection and was divided into two parts, 720 and 720a. Other than for the specimen serving as the holotype of *Matteuccia orientalis* f. *monstra* (distributed as *Matteuccia centro-chinense*, an unpublished name), the identity and disposition of these two numbers in Chinese herbaria are not known. However, specimens were deposited in HIB, KUN, NAS, SFDH, and WH under no. 720.

***Matteuccia orientalis* (Hooker) Trev. forma *monstra* Ching & Shing, forma nov. FIGURE 8.**

A forma typica differt pinnis lateralibus angustioribus integrisque infra partem apicalem plus minusve incisas.

Sterile fronds ca. 80 cm tall. Stipe to 30 cm long, 6 mm in diameter, stramineous, densely covered at base with lanceolate, light brown, entire scales ca. 1.6 cm long, subglabrous upward; lamina oblong, ca. 50 by 34 cm, imparipinnate; pinnae ca. 20 pairs, obliquely patent, opposite, the lower ones separated by intervals ca. 2–3 cm wide, becoming closer upward, the basal pinnae as long as those above, to 17 by 1.5 cm, narrower (ca. 7 mm) toward base, sessile, linear, acuminate, margins crenate, the upper pinnae similar but with apical portion pinnatifid with segments ca. 6 mm long; veins in all segments simply forked. Fronds glabrous, drying brownish green. The fertile fronds ca. 60 cm tall; stipe 35 cm long, dark-stramineous, glabrous above base; lamina 28 cm long; fertile pinnae approximate, sessile, linear, dark brown, glossy, leathery, distichous, 6 by 4 mm, reflexed margin persistently incurved, indusium brownish, fimbriate.

TYPE. China, western Hubei Province, Shennongjia Forest District (31°30'N, 110°30'W), vicinity of Muyuping Forest Brigade on the SE side of the watershed divide between the Changjiang (Yangtze) and Hanjiang rivers near km 73 from Xingshan Xian, elevation 1450–1600 m; cutover *Fagus-Quercus-Bet-*



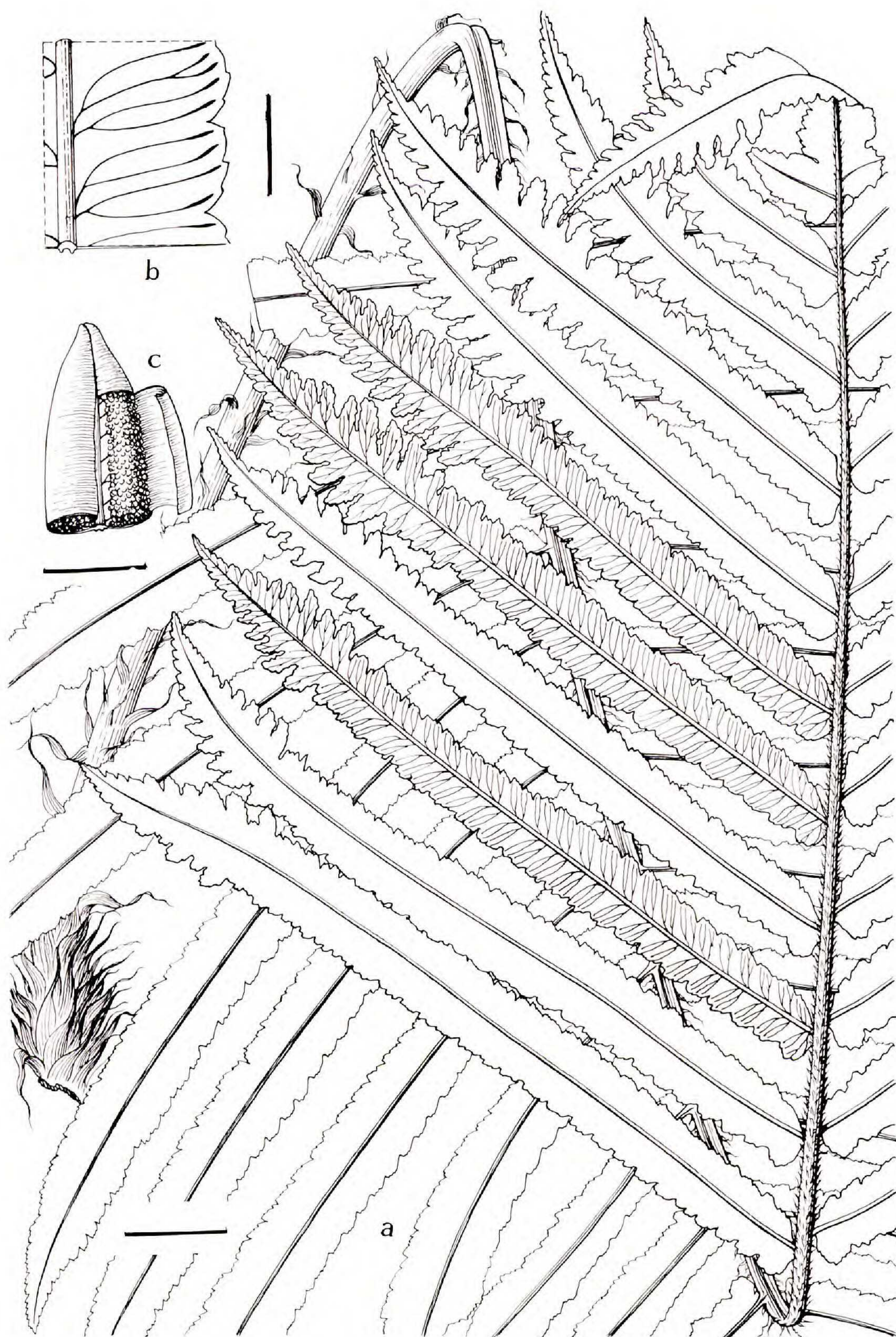


FIGURE 8. *Matteuccia orientalis* f. *monstra*: a, sterile frond (bar = 2 cm); b, portion of sterile pinna (bar = 5 mm); c, apical portion of fertile pinna (bar = 5 mm).



*ula* forest on steep, moist slopes, SE exposure; fronds tufted from erect rhizome, 7 September 1980, *Sino-Amer. Bot. Exped.* 720 (holotype, PE; isotypes, A, NY).

A peculiar form differing from all other known members of the genus in having sterile fronds with narrowly linear, crenate pinnae (the upper ones pinnatifid apically) and simply forked veins. This may be an abnormal form of *Matteuccia orientalis* (Hooker) Trev.; further field observations are needed.

*Matteuccia struthiopteris* (L.) Todaro\*

999 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

WOODSIACEAE

*Woodsia polystichoides* D. C. Eaton

853 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

BLECHNACEAE

*Struthiopteris eburnea* (Christ) Ching\* (syn.: *Blechnum eburneum* Christ)

1896 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Woodwardia unigemmata* (Makino) Nakai

486 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 2057 (A, HIB, UC).

PERANEMACEAE

*Peranema cyathoides* D. Don

2085 (A, HIB).

DRYOPTERIDACEAE

*Cyrtomium fortunei* J. Sm.

238 (A, HIB); 1500 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1569 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Cyrtomium macrophyllum* Tagawa

238a (A); 1092 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

***Dryopteris apicifixa* Ching, Boufford, & Shing, sp. nov.**

Species proxime affinis *Dryopteris juxtaposita* Christ, sed in statura multo minore, rachi paleacea, pinnis pinnulisque multo brevioribus, soris ad pinnis supremas restrictis, differt.

Plants ca. 50 cm tall. Rhizome short, erect; fronds tufted. Stipe ca. 23 cm long, 1.2 mm in diameter, stramineous, densely covered at base with broadly lanceolate, thin, light brown scales; lamina oblong, 28 cm long, 15 cm wide at base, acuminate at apex, bipinnate; pinnae pinnate, ca. 6 pairs, opposite, short-petiolate, patent, the basal pair slightly larger, 9 by 4 cm, oblong, acuminate at apex, rounded at base, the upper ones similar in outline but gradually smaller than basal pair; pinnules ca. 10 pairs, closely spaced, bas-



isomorphic ones longer than acroscopic, the basal one not abbreviated, as large as those upward, 2–3 cm long, 1 cm wide at base, sessile, lanceolate, acute at apex, pinnatifid with few rounded lobes, the acroscopic pinnules 1.5 cm long, 8 mm wide at base, oblong, blunt at apex, margins crenate. Fronds drying light green, glabrous except for rachis, which is covered with rather sparse, lanceolate, dark brown scales. Sori small, confined to apical part of lamina, 2 or 3 pairs per pinnule; indusium light brown, rather thin, curling, deciduous.

TYPE. China, western Hubei Province, Shennongjia Forest District (31°30'N, 110°30'E), along the trail between Hongriwan construction camp and Quijiaping, elevation 1200–1400 m; growing in bamboo thicket, 2 September 1980, *Sino-Amer. Bot. Exped.* 543 (holotype, PE; isotypes, A, CM, HIB, UC).

*Dryopteris apicifixa* is related to *D. juxtaposita* Christ but differs in its much smaller size, its scaly rachis, its much shorter pinnae, and its pinnules with the sori confined to the apical part of the lamina.

*Dryopteris bissetiana* (Baker) C. Chr.\*

849 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Dryopteris handelii* C. Chr.\*

1293 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

***Dryopteris infrapuberula*** Ching, Boufford, & Shing, sp. nov.

FIGURE 9.

Species insignis habitu *Dryopteris yunnanensis* Christ e provincia Yunnan, sed in stipite (e basi sursum) omnino glabro, pinnis ad basin conspicue dilatatis, venis in segmentis omnibus simplicibus, et pinnis subtus praecipue secus venas sparse puberulis, facile distinguitur.

Plants ca. 80 cm tall; growing tip covered with dark brown, broadly lanceolate scales; fronds tufted. Stipe ca. 23 cm long, 3 mm in diameter, dark straw colored, nearly glabrous from base upward; lamina elliptic-oblong, 40 cm long, 23 cm wide at middle, acuminate at apex, slightly narrowed toward base, pinnate-pinnatilobed; pinnae ca. 23 pairs, patent, separated by narrow intervals, the basal pair somewhat abbreviated, to 7 cm long, horizontally patent, the middle ones to 13 cm long, 2 cm wide at base, sessile, lanceolate, acuminate at apex, dilated at base, lobate-pinnatifid, with lobes ca. 3 by 5 mm, roundish, entire; veins 5 pairs in each lobe, simple, anterior basal vein reaching sinus, posterior one reaching margin slightly above sinus. Fronds chartaceous, drying green, the rachis copiously covered with dark brown, linear, appressed scales, the undersurfaces of costae covered with small, lanceolate, brown scales with ciliate margins, the midribs and veins with few minute hairs. Sori rather small, 3 or 4 pairs per segment, medial; indusium dark brown, firm, ultimately deciduous.

TYPE. China, western Hubei Province, Shennongjia Forest District (31°30'N, 110°30'E), vicinity of Quijiaping, elevation 1440–1650 m; moist, level areas along stream in mixed deciduous–broad-leaved evergreen–coniferous forest, 3 September 1980, *Sino-Amer. Bot. Exped.* 619 (holotype, PE; isotypes, A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).



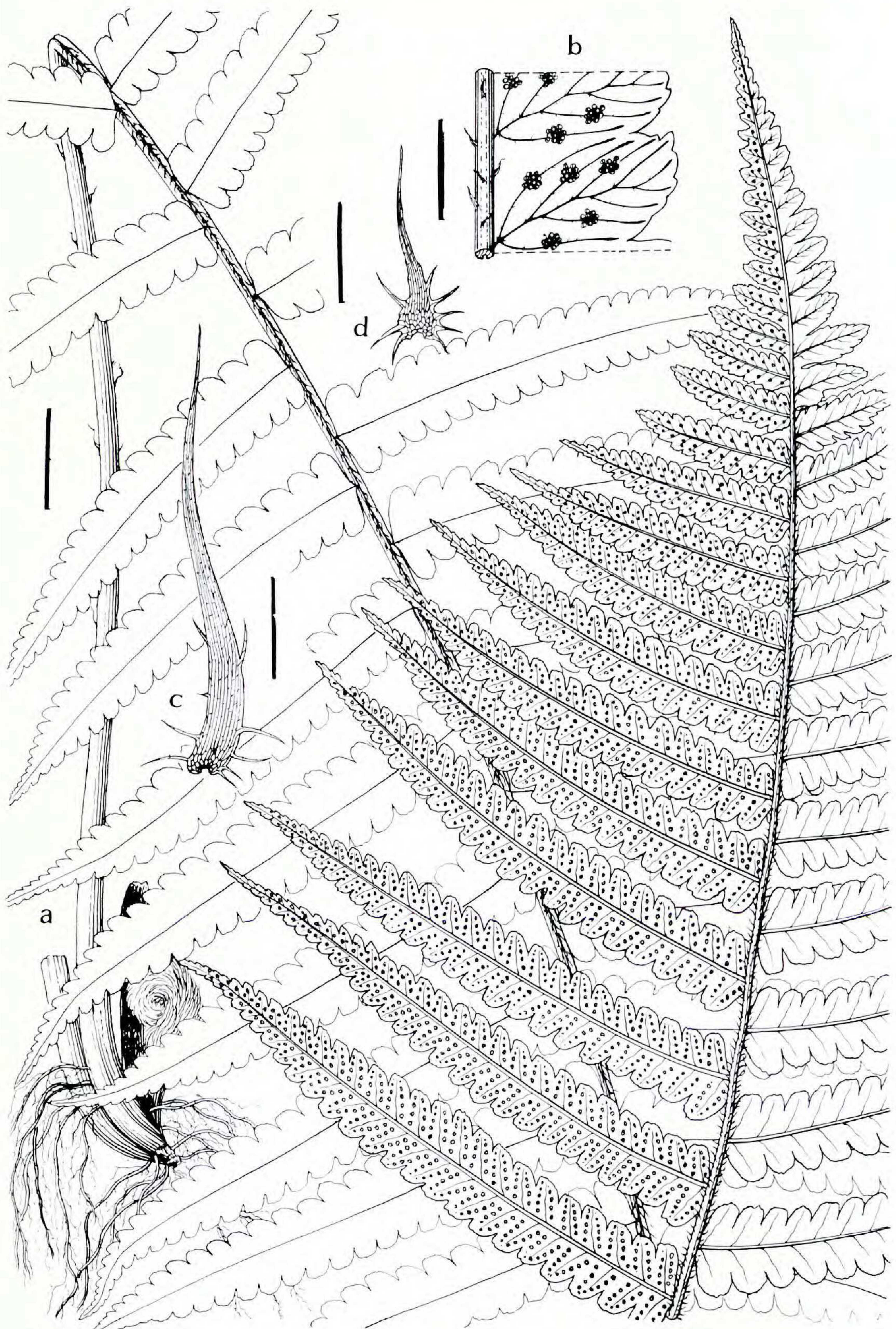


FIGURE 9. *Dryopteris infrapuberula*: a, frond (bar = 2 cm); b, portion of pinna with sori (bar = 5 mm); c, scale from undersurface of rachis (bar = 1 mm); d, scale from undersurface of costa (bar = 1 mm).



*Dryopteris infrapuberula* is an outstanding species of the group containing *D. yunnanensis* Christ, from Yunnan Province, but is easily distinguished by the dark straw colored stipe naked from the base upward, the pinnae with broadened bases, the veins in the segments all simple, and the undersurfaces of the pinnae (especially along the veins) sparsely puberulous.

*Dryopteris labordei* (Christ) C. Chr.

2054 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Dryopteris nemagetae* (Kurata) Kurata\*

1292 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Dryopteris neolacera* Ching\*

759 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Dryopteris rosthornii* (Diels) C. Chr.

311 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

***Dryopteris submarginalis*** Ching, Boufford, & Shing, sp. nov.      FIGURE 10.

Species ex affinitate *Dryopteris pulcherrimae* Ching, sed in statura multo majore (planta usque ad 78 cm alta), lamina latiore, pinnis longioribus, costis subtus distincte canaliculatis, et soris submarginalibus, recedit.

Plants to 78 cm tall; rhizome short, erect; fronds fasciculate. Stipe short, to 10 cm long, 5 mm in diameter, densely covered with dark brown, lanceolate scales; lamina to 68 cm long, 16 cm wide at middle, oblanceolate, acuminate at apex, gradually narrowed toward base, base ca. 8 cm wide, bipinnatipartite; pinnae numerous, ca. 38 pairs, patent, sessile, separated by narrow intervals, lower ones more widely separated, the basal pair 4 cm long, the middle ones to 8 cm long, 1.5 cm wide at base, lanceolate, acuminate at apex, truncate at base, pinnatipartite to narrow wing along each side of costa; segments ca. 22 pairs, patent, separated by narrow sinuses, oblong, ca. 6 by 2 mm, entire; veins 5 or 6 pairs in each segment, simple, oblique. Fronds herbaceous, drying green, costa canaliculate beneath, copiously covered with brown, ovate, membranaceous scales, glabrous above except for some brown, deciduous fibrils along lower part of costa; rachis densely covered beneath with ovate-acuminate, fimbriate scales, densely fibrillose above. Sori rather small, 3 to 5 pairs per segment, submarginal; indusium light brown, firm, ultimately curling, usually persistent.

TYPE. China, western Hubei Province, Shennongjia Forest District (31°30'N, 110°30'E), S end of the Loyang River gorge near Pingqian, elevation ca. 1300 m; deciduous forest on steep slope along the river, 14 September 1980, *Sino-Amer. Bot. Exped. 1356* (holotype, PE; isotypes, A, CM, HIB, KUN, KYO, NA, NAS, NY, SFDH, UC, WH).

*Dryopteris submarginalis* is related to *D. pulcherrima* Ching of the same region, but differs in its much larger size, its broader lamina and longer pinnae, and its costae that are distinctly canaliculate beneath.

***Dryopteris supraimpressa*** Ching, Boufford, & Shing, sp. nov.

Species affinis *Dryopteris marginatae* (Hope) Christ, sed in statura multo minore, lamina basi tripinnatifida nec tripinnata, pinnulis brevioribus api-



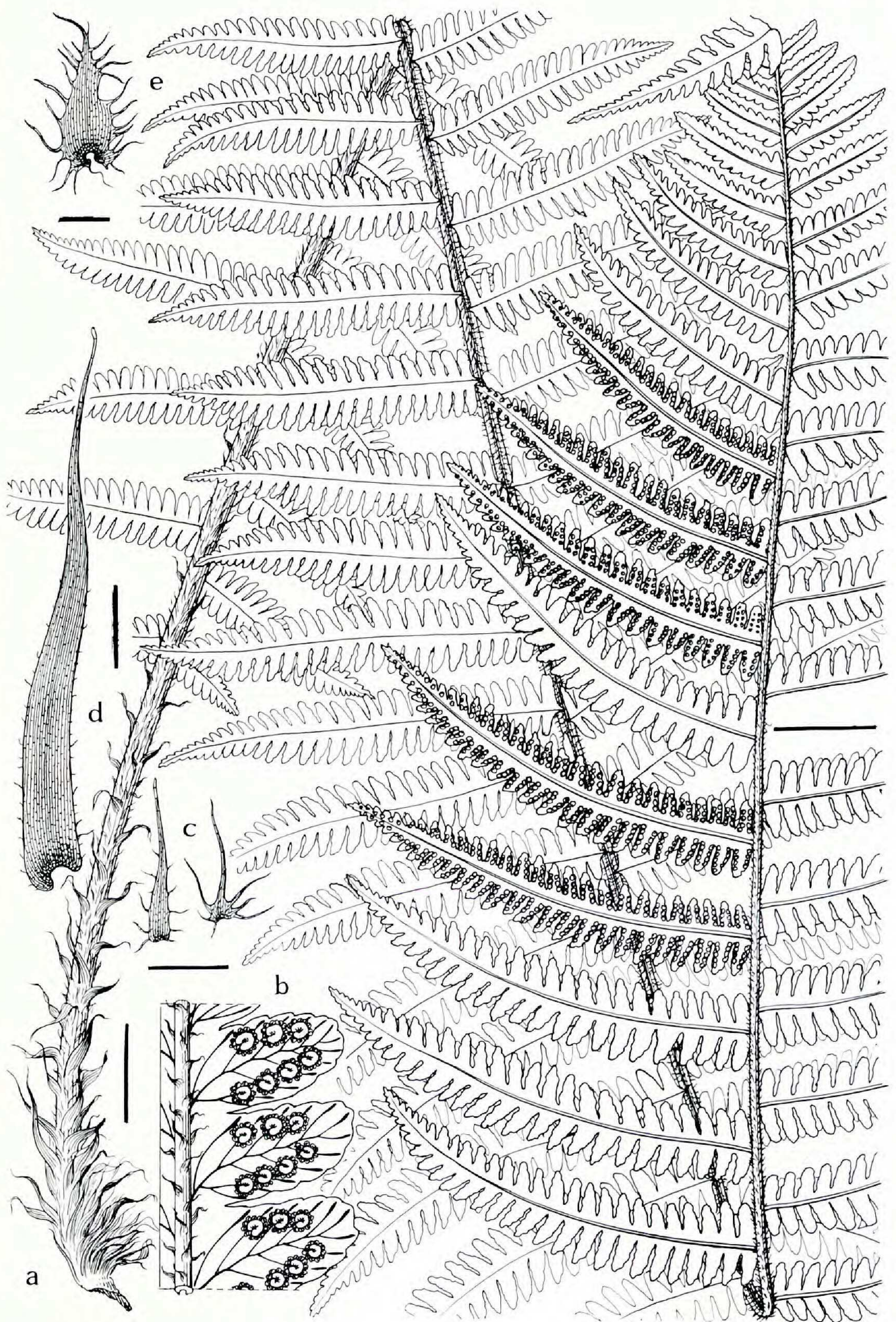


FIGURE 10. *Dryopteris submarginalis*: a, frond (bar = 2 cm); b, portion of pinna with sori (bar = 5 mm); c, d, scales from stipe (bars = 2 mm); e, scale from rachis (bar = 1 mm).



cibus obtusiusculus, firme chartaceis, et venis supra distincte impressis apice hydathodo impresso rotundo prope marginem terminatis, differt.

Plants to 75 cm tall. Stipe 26 cm long, 3 mm in diameter, stramineous, covered at base with brown, lanceolate scales ca. 1 cm long, glabrous upward; lamina ovate, ca. 50 by 34 cm, acuminate at apex, rounded at base, pinnate-pinnatifid; pinnae ca. 10 pairs, close, obliquely patent, petiolate, the basal pair as large as those next above, ca. 20 by 9 cm, oblong-lanceolate, pinnate, acuminate at apex, truncate at base, petiole ca. 1 cm long; pinnules ca. 13 pairs, smaller upward, spreading, closely spaced, sessile, the basioscopic ones slightly longer than acroscopic ones, the basal pinnule not abbreviated but as long as the next 2 on same side, ca. 6 cm long, 1.2 cm wide at base, lanceolate, slightly falcate, apex acute, pinnatifid from slightly over halfway to base, obtusely lobed, the acroscopic pinnules ca. 4 cm long, apex obtuse, margins lobed or crenate; veins distinctly impressed above, ending in round, impressed hydathode near margin. Fronds thick-chartaceous, drying green, both surfaces and rachis glabrous. Sori medium sized, 4 to 7 (or 8) pairs per pinnule, near midrib; indusium light brown, firm, curling at maturity, ultimately deciduous.

TYPE. China, western Hubei Province, metasequoia region of Lichuan Xian (30°10'N, 108°45'E), vicinity of Zhuanjiowan on the E side of the valley, elevation ca. 1500 m, 7 October 1980, *Sino-Amer. Bot. Exped. 2020* (holotype, PE; isotypes, A, CM, HIB, KUN, NA, NAS, NY, UC).

*Dryopteris supraimpressa* is a distinct species of the group containing *D. marginata* (Hope) Christ. It differs from *D. marginata* in its smaller size, its thick-chartaceous texture, and its distinctly impressed nerves terminated by round, impressed hydathodes near the margin on the upper surface of the pinnules.

*Dryopteris tokyoensis* (Makino) C. Chr.\*

1258 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Polystichum craspedosorum* (Maxim.) Diels

418 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Polystichum deltodon* (Baker) Diels

500 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1079 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Polystichum erosum* Ching & Shing\*, *Acta Phytotax. Sinica* **10**: 303. 1965.

1764 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC).

***Polystichum lobatopinnulum*** Ching, Boufford, & Shing, sp. nov.

Habitu *Polystichum makinoii* Tagawa similis, sed in pinnulis minoribus, margine inferiore aristis fere destitutis, pinnula basali acroscopica quam ceteris longiore margine lobato-incisa et sori submarginalibus recedit.

Plants to 57 cm tall. Stipe to 20 cm long, 2.5 mm thick, pale-stramineous, the lower part covered with large, ovate-acuminate, brown as well as blackish scales, the scales on upper part of stipe smaller, brown, lanceolate, with long,



hair-tipped apex; lamina narrowly oblong to broadly lanceolate, ca. 40 by 11 cm, acuminate at apex, not narrowed at base, bipinnate; pinnae ca. 20 pairs, sessile, lanceolate, ca. 5.5 cm long, 1.6 cm wide above truncate base, acuminate at apex, produced on anterior side, separated by narrow intervals; pinnules ca. 12 pairs, patent, oblong, subfalcate, ca. 7 by 3.5 mm, acute at apex, with deltoid auricle at anterior base, margins more or less aristate-serrate, the acroscopic basal pinnule longer than others, 1.2 cm long, lobate-incised. Fronds herbaceous when dry, greenish, glabrous above, sparsely fibrillose on costules beneath, rachis densely covered with brown, lanceolate, deflexed scales, these subulate at apex. Sori small, submarginal; indusium dark brown, firm, ultimately deciduous.

TYPE. China, western Hubei Province, metasequoia region of Lichuan Xian (30°10'N, 108°45'E), vicinity of Zhuanjiaowan on the E side of the valley, elevation ca. 1500 m; moist, steep, rocky slope, 7 October 1980, *Sino-Amer. Bot. Exped.* 2059 (holotype, PE; isotypes, A, CM, HIB, KUN, KYO, NA, NAS, NY, SFDH, UC, WH).

*Polystichum lobatopinnulum* is similar to *P. makinoii* Tagawa in habit, but differs in the smaller pinnules with the lower margins nearly without aristate teeth, the longer and lobate-incised acroscopic basal pinnule, and the submarginal sori.

***Polystichum longiaristatum* Ching, Boufford, & Shing, sp. nov.**

Species arcte affinis *Polystichum shennongense* Ching, Boufford, & Shing, sed in stature minore, stipite paleis minoribus sparsioribus oblecto, pinnis minoribus infimis quam sesquentibus paulo longioribus, pinnula basali acroscopica paulo elongata sed integra, et pinnulis apicibus acutis et marginibus longius aristato-serrulatis, differt.

Plants ca. 70 cm tall. Stipe ca. 22 cm long, 2 mm in diameter, pale-stramineous, moderately covered with broad, brown scales (lower ones darker); lamina narrowly oblong, ca. 42 cm long, 16 cm wide at middle, 19 cm wide at base, bipinnate; pinnae ca. 23 pairs, patent, separated by narrow intervals, the basal pair longer than those next above, ca. 9 cm long, 2 cm wide above base, lanceolate, acuminate at apex, pinnate; pinnules ca. 15 pairs, patent, closely spaced, the apex acute, the base cuneate, with acroscopic, deltoid auricle, the margins scarcely serrate but with very long, fine aristae. Fronds chartaceous, drying green; undersides, costae, and rachis with dense, brown, linear-lanceolate, hair-tipped, deflexed scales; pinnules glabrous above, with few brown fibrils beneath. Sori small, 4 or 5 pairs per pinnule, medial; indusium small, fugaceous.

TYPE. China, western Hubei Province, Shennongjia Forest District (31°30'N, 110°30'E), Zhushanyazi Pass on the W side of the Dajiuhu basin, elevation ca. 1780 m; moist ravines and stream margins in *Quercus-Fagus-Populus* forest on low hills, 13 September 1980, *Sino-Amer. Bot. Exped.* 1248 (holotype, PE; isotypes, A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, SFDH, UC, WH).



*Polystichum longiaristatum* is closely related to *P. shennongense* Ching, Boufford, & Shing, from which it differs in its smaller size, its stipes covered with smaller and less dense scales, its pinnae with a somewhat elongate, entire, anterior basal pinnule, and its pinnules all with acute apices and less prominently serrate margins, but with much longer, weaker aristae.

*Polystichum neolobatum* Nakai

541 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1228 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC); 1818 (A, HIB).

*Polystichum pteroptrum* (Maxim.) Diels\*

1235 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

***Polystichum shennongense* Ching, Boufford, & Shing, sp. nov.      FIGURE 11.**

Species ad aspectu arcte affinis *Polystichum longiaristati* Ching, Boufford, & Shing, sed in stipite paleis majoribus densioribusque oblecto, pinnis basalibus unjugis quam sequentibus brevioribus, pinnis mediis basi antica pinnula elongata pinnatifida praeditis et pinnulis apicibus acutis vel subobtusis, marginibus aristis brevioribus armatis, recedit.

Plants to 1 m tall. Stipe ca. 30 cm long, 5–6 mm in diameter, very densely covered with large, ovate-acuminate, light brown, spreading scales; lamina ca. 70 by 24 cm, elongate-oblong, acuminate at apex, slightly narrowed at base, bipinnate; pinnae ca. 30 pairs, spreading, sessile, alternate, separated by intervals equal in width to pinnae, or lower ones opposite with intervals wider than pinnae, the basal pinnae 8–9 cm long, the middle pinnae 12–13 cm long, 2 cm wide above base, linear, acuminate at apex, truncate at base, oblique, pinnate; pinnules ca. 19 pairs, close, patent, oblong, 1 by 6 mm, straight below, with deltoid auricle above, acute or subobtuse at apex, margins aristate-serrate, the anterior basal pinnule elongate, 1.5 cm long, pinnatifid, close to rachis. Fronds thinly chartaceous, drying green, both sides sparsely fibrillose, costa of pinnae scaly beneath, rachis densely covered with light brown, broadly lanceolate, hair-tipped, reflexed scales. Sori small, 4 or 5 pairs per pinnule, medial; indusium rufous brown, firm, persistent.

TYPE. China, western Hubei Province, Shennongjia Forest District (31°30'N, 110°30'E), Zhushanyazi Pass on the W side of the Dajiuhu basin, elevation ca. 1780 m; *Quercus-Fagus-Populus* forest on low hills, along stream bed in shade, 13 September 1980, *Sino-Amer. Bot. Exped.* 1236 (holotype, PE; isotypes, A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, SFDH, UC, WH).

Although *Polystichum shennongense* closely resembles *P. longiaristatum* Ching, Boufford, & Shing in general habit, it differs in having the stipes covered in larger and denser scales, the basal pair of pinnae not larger than those next above, the middle pinnae with an elongate, pinnatifid pinnule on the anterior base, and the pinnules with a subobtuse or acute apex and shortly aristate-serrate margins.

*Polystichum submite* (Christ) Diels\*

325 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



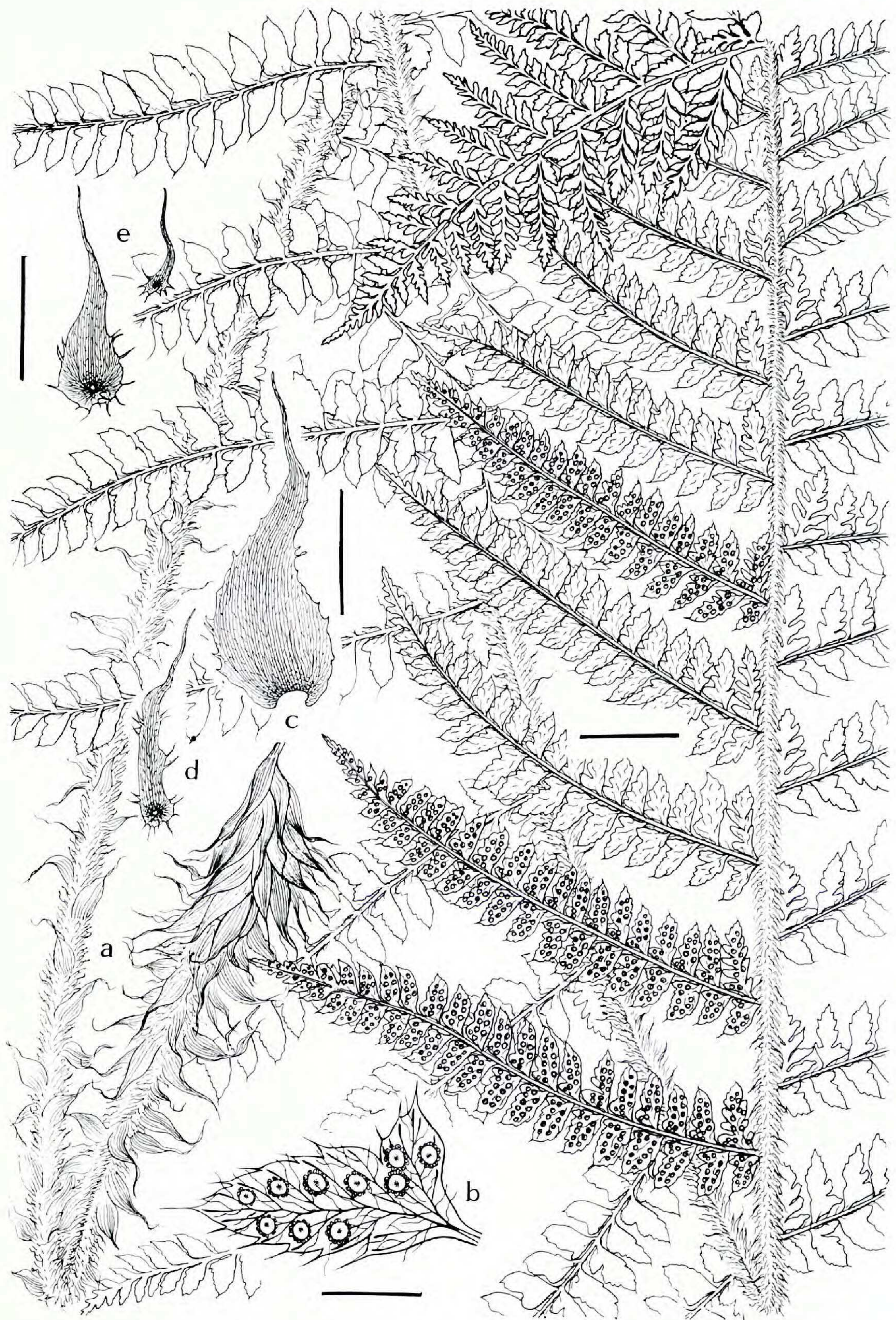


FIGURE 11. *Polystichum shennongense*: a, frond (bar = 2 cm); b, pinnule with sori (bar = 5 mm); c, d, scales from stipe (bar = 5 mm); e, scales from rachis (bar = 5 mm).



*Polystichum tsus-simense* (Hooker) Moore

406 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1062 (A, CM, HIB, KUN, NAS, NY, PE, UC); 1653 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

## POLYPODIACEAE

*Arthromeris cuneata* Ching

1971 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 2029 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Drymotaenium miyoshianum* (Makino) Makino

2058 (HIB).

*Lepidogrammitis drymoglossoides* (Baker) Ching (syn.: *Lemmaphyllum drymoglossoides* Baker)

2027 (A, CM, HIB, NAS, PE, UC).

*Lepidogrammitis elongata* Ching\*, Fl. Tsinlingensis 2: 232. 1974.

553 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1363 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Lepisorus asterolepis* (Baker) Ching\*, Jiangsu Zhi Wu Zhi (Fl. Jiangsuensis) 1: 74. fig. 112. 1977.

1163 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Lepisorus contortus* (Christ) Ching

134 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 358 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Lepisorus distans* (Tagawa) Ching\*, Acta Phytotax. Sinica 10: 302. 1965.

1297 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Lepisorus marginatus* Ching, Fl. Tsinlingensis 2: 233. 1974.

15 (A, HIB, NAS, NY, PE, UC); 61 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 515 (A, CM, HIB, KUN, NA, NAS, PE, UC).

*Lepisorus paohuashanensis* Ching\*, Jiangsu Zhi Wu Zhi (Fl. Jiangsuensis) 1: 467. fig. 113. 1977.

962 (A, HIB, PE, UC).

*Lepisorus thunbergianus* (Kaulf.) Ching

1817 (A, HIB).

*Microsorium fortunei* (Moore) Ching

426 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 556 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1430 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Microsorium subhastatum* (Baker) Ching (distributed as *Lepidomicrosorium subhastatum* (Baker) Ching)

2083 (A, CM, HIB, NY, PE, UC).

*Neolepisorus ovatus* (Bedd.) Ching, Acta Phytotax. Sinica 9: 99. 1964, forma *deltoidea* (Baker) Ching, *ibid.*

247 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1431 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

**Polypodioides pseudo-amoenum** (Ching) Ching, comb. nov.

BASIONYM: *Polypodium pseudo-amoenum* Ching, Fl. Tsinlingensis 2: 177. 1974.



332 (A, CM, HIB, KUN, NAS, PE, UC); 356 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pyrrosia assimilis* (Baker) Ching\*

805 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pyrrosia caudifrons* Ching, Boufford, & Shing, sp. nov.

FIGURE 7, d–g.

Species configuratione proxime affinis *Pyrrosia linguae* (Thunb.) Farw., sed in fronde ambitu elliptica ad apicem caudata, stipitis longitudine aliquanto superante, textura tenuiore, differt, necnon *P. heteractae* (Mett.) Ching valde similis, sed statura minore, pilis stellatis solum e brachiis lanceolatis constitutis, differt.

Plants 20–22 cm tall. Rhizome wide-creeping, ca. 2 mm in diameter, densely covered with lanceolate, brown scales with ciliate margins. Fronds distant, 4–5 cm apart. Stipe 10–12 cm long, firm, dark-stramineous, glabrous above base; lamina 13–15 cm long, 3–4 cm wide at middle, elliptic, caudate at apex, cuneate at base, subcoriaceous, buff colored, glabrous above, covered beneath with thin tomentum of 1-layered, uniform, appressed stellate hairs consisting only of lanceolate arms, the lateral veins distinct to leaf margin, obliquely ascending. Sori subrounded or oblong, dense, in close rows of 4 or 5 between lateral veins, light colored when young, dark red at maturity.

TYPE. China, western Hubei Province, Shennongjia Forest District (31°30'N, 110°30'E), vicinity of Duanjiangping, 11 September 1980, *Sino-Amer. Bot. Exped. 1159* (holotype, PE; isotypes, A, CM, E, HIB, KUN, KYO, NA, NAS, NY, SFDH, UC, WH).

ADDITIONAL SPECIMENS EXAMINED. **China.** HUBEI: Hefeng, *H. J. Li* 6840, 8393 (PE). SICHUAN: Emei Shan (Mt. Omei), *K. H. Shing & K. Y. Long* 519, 525, 1163 (PE); Tianjuan, *K. J. Kuan et al.* 2330 (PE); Leipo, *Z. T. Kuan* 8426 (PE); Daxiang Ling, *S. S. Kung* 3691 (PE).

*Pyrrosia caudifrons* is similar to *P. lingua* (Thunb.) Farw. in habit, but differs in the elliptic outline, caudate apices, and thinness of the fronds, which are slightly longer than the stipe. *Pyrrosia caudifrons* is also very similar to *P. heteracta* (Mett.) Ching in habit, but differs mainly from this species in its smaller size and in the stellate hairs on the undersurface of the fronds consisting of only lanceolate arms. The stellate hairs in *P. heteracta* have both lanceolate and aciculate arms.

*Pyrrosia drakeana* (Franchet) Ching

18 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 519 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1816 (A, HIB).

*Pyrrosia gralla* (Giesenh.) Ching\*

1714 (A, HIB, PE, UC).

*Pyrrosia lingua* (Thunb.) Farw.

1929 (A, CM, HIB, NA, NAS, PE, UC).

*Pyrrosia mollis* (Kunze) Ching

547 (A, HIB, UC).



*Pyrrosia petiolosa* (Christ) Ching

438 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pyrrosia pseudocalvata* Ching, Boufford, & Shing, sp. nov.

Species (critica ex affinitate) *Pyrrosia calvatae* (Baker) Ching valde simile (cui ambitu congruit), sed in pilis stellatis deciduis e branchiis aciculatis brunneis, aliter glabra, recedit.

Plants 40–67 cm tall. Rhizome short, thick, procumbent, ca. 6 mm in diameter, densely covered with lanceolate, brown scales with ciliate margins. Fronds proximate. Stipe 8–13 cm long, greenish stramineous, glabrous above base; lamina 30–50 cm long, 2.5–3 cm wide at middle, lanceolate, acuminate at apex, gradually narrowed at base, decurrent, coriaceous, both sides yellow-green, glabrous above, sparsely covered beneath with single layer of deciduous, stellate hairs with aciculate arms; veins indistinct. Sori subrounded, densely covering undersurface from middle to apex, yellow-green when young, brown at maturity.

TYPE. China, western Hubei Province, Xingshan Xian (31°05'N, 110°30'E), ca. 1 km W of the Leigutai Hydroelectric Power Station at the confluence of the Jiuchong and Dangyang rivers, elevation ca. 390 m; steep rocky slope, 5 September 1980, *Sino-Amer. Bot. Exped. 1110* (holotype, PE; isotypes, A, CM, HIB, KUN, NA, NAS, NY, UC).

ADDITIONAL SPECIMENS EXAMINED. **China.** GANSU: Wen Xian, *Y. Q. He 1337* (PE). GUIZHOU: Xingyi, *An-Shun Exped. 640* (PE); Qingzhen, *Sichuan-Guizhou Exped. 2166* (PE); Zunyi, *Sichuan-Guizhou Exped. 1405* (PE). HUBEI: Shennongjia Forest District (31°30'N, 110°30'E), Honghua ravine on W side of Dangyang R. N of Honghua, elev. ca. 820 m, growing on rock in forest, *1980 Sino-Amer. Bot. Exped. 1429* (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); Shennongjia Forest District, vic. of Houshanping on S side of Hou R., elev. 800–1050 m, *1980 Sino-Amer. Bot. Exped. 1663* (A, CM, HIB, NA, NAS, NY, PE); Badong, *H. C. Chow 957* (PE); Enshi, *H. C. Chow 1940* (PE); He-feng, *H. J. Li 4949* (PE). HUNAN: Mang Shan, *K. Z. He 4938* (PE). SHANXI: Pingli, *K. Y. Bei 20* (PE). SICHUAN: Emei Shan (Mt. Omei), *K. H. Shing & K. Y. Long 1083* (PE); Zhenkou, *T. L. Dai 100121, 102488, 104590, 107167, 107796* (PE).

Because of the similarity in general outline of the fronds, *Pyrrosia pseudocalvata* has been considered identical to *P. calvata* (Baker) Ching. It differs in having only a single layer of sparse, deciduous, stellate hairs with aciculate arms instead of a double layer, of which the ground layer consists of stellate hairs with usually persistent, wooly arms. The geographic distribution of the species also differs: *P. calvata* occurs in Guangdong, Guangxi, Yunnan, Fujian, and southern Zhejiang provinces, and the two meet only in Guizhou Province.

*Pyrrosia sheareri* (Baker) Ching

1925 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 2055 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Saxiglossum angustissimum* (Giesenh.) Ching, *Acta Phytotax. Sinica* **10**: 301. 1965.

428 (A, CM, HIB, KUN, NA, NAS, PE, UC); 697 (A, CM, HIB, KUN, NA, NAS, NY,



PE, SFDH, UC, WH); 852 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

# LOXOGRAMMACEAE

*Loxogramme grammitoides* (Baker) C. Chr.\*

546 (A, HIB).

*Loxogramme saziran* Tagawa\*

427 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 514 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1294 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

# AZOLLACEAE

*Azolla imbricata* (Roxb.) Nakai

2056 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

## GYMNOSPERMAE

# TAXACEAE

*Amentotaxus argotaenia* (Hance) Pilger

533 (A, HIB, NA).

*Taxus chinensis* (Pilger) Rehder

585 (A, HIB); 777 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1540 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1824 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Torreya fargesii* Franchet

584 (A, HIB); 625 (HIB).

# CEPHALOTAXACEAE

*Cephalotaxus fortunei* Hooker f.

751 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1038 (A, CM, E, HIB, KUN, NAS, NY, PE, SFDH, UC, WH).

*Cephalotaxus sinensis* (Rehder & Wilson) H. L. Li

104 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1759 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1829 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

# PINACEAE

*Abies fargesii* Franchet

958 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Keteleeria davidiana* (Bertr.) Beiss.

244 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Picea wilsonii* Mast.

126 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1823 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pinus armandii* Franchet



384 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC); 877 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pinus massoniana* Lamb.

1729 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Pinus massoniana* Lamb. var. *henryi* (Mast.) Wu, Acta Phytotax. Sinica 5: 153. 1956.

1466 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Tsuga chinensis* (Franchet) Pritzel

1385 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1827 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

#### CUPRESSACEAE

*Cupressus funebris* Endl.

1914 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### TAXODIACEAE

*Metasequoia glyptostroboides* Hu & Cheng

2082 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

### ANGIOSPERMAE

#### Dicotyledones

#### SAURURACEAE

*Houttuynia cordata* Thunb.

468 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### CHLORANTHACEAE

*Chloranthus multistachys* Péri

456 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1699 (A, CM, HIB, KUN, NA, PE).

#### SALICACEAE

*Populus davidiana* Dode

1388 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Populus lasiocarpa* Oliver\*

1343 (A, HIB).

*Populus wilsonii* Schneider

742 (A, HIB).

*Salix fargesii* Burkill

1815 (A, HIB).

*Salix fargesii* Burkill var. *kansuensis* (Hao) N. Chao, Feddes Repert. Spec. Nov. Regni Veg. Beih. 93: 61. 1936.

235 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



## JUGLANDACEAE

*Juglans cathayensis* Dode

450 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, WH).

*Platycarya strobilacea* Sieb. & Zucc.

1574 (A, CM, HIB, KUN, NA, NAS, PE).

*Pterocarya delavayi* Franchet\*

1544 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Pterocarya hupehensis* Skan

940 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pterocarya paliurus* Batalin (syn.: *Cyclocarya paliurus* (Batalin) Iljinskaja)

1299 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pterocarya stenoptera* DC.

1573 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

## BETULACEAE

*Betula albo-sinensis* Burkill

31 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Betula* cf. *albo-sinensis* Burkill

897 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

This collection may represent a hybrid between *Betula albo-sinensis* and *B. utilis* D. Don, another species credited to the Shennongjia region (Anonymous, 1980) but not collected by the 1980 Sino-American Botanical Expedition.

*Betula fargesii* Franchet

904 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Betula insignis* Franchet

183 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Betula luminifera* H. Winkler

734 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Carpinus chinensis* (Franchet) Cheng (syn.: *C. cordata* Blume var. *chinensis* Franchet, J. Bot. 13: 202. 1899.)

1528 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Carpinus fargesii* Franchet

1011 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Carpinus hupeana* Hu

1548 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Carpinus simplicidentata* H. H. Hu

1009 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1486 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Corylus ferox* Wallich var. *tibetica* (Batalin) Franchet, J. Bot. 13: 200. 1899.

12 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 346 (A, HIB, NA, PE); 383 (A, CM, HIB, PE); 1048 (A, HIB, NAS, NY, PE, UC).

*Corylus heterophylla* Fischer ex Trautv. var. *sutchuenensis* Franchet, J. Bot. 13: 199. 1899.

214 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 613 (A, CM,



HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1255 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1882 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Corylus mandshurica* Maxim. & Rupr.\* (syn.: *C. sieboldiana* Blume var. *mandshurica* (Maxim. & Rupr.) Schneider, Pl. Wilsonianae 2: 454. 1916.)

1535 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

An interesting species with a discontinuous distribution from Sichuan (and now western Hubei) in central China, to northeastern China and Korea, and the northern Japanese island of Hokkaido. (See Schneider, Pl. Wilsonianae 2: 454. 1916, for additional details of distribution.)

*Corylus yunnanensis* (Franchet) A. Camus

1230 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### FAGACEAE

*Castanea henryi* (Skan) Rehder & Wilson

1852 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Castanea mollissima* Blume

463 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 798 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1427 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1884 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 2034 (A, HIB).

*Fagus engleriana* Seem.

1221 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1309 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Fagus longipetiolata* Seem.

1479 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Fagus lucida* Rehder & Wilson

1485 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Lithocarpus cleistocarpus* (Seem.) Rehder & Wilson

728 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lithocarpus polystachyus* (Wallich ex DC.) Rehder\*

1126 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Quercus acutidentata* (Maxim.) Koidz.

378 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 743 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1858 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Quercus engleriana* Seem.

577 (A, HIB, UC).

*Quercus glandulifera* Blume

1193 (A, HIB, PE); 1883 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1931 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Quercus glandulifera* Blume var. *brevipetiolata* (A. DC.) Nakai, J. Arnold Arbor. 5: 76. 1924.

778 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Quercus glauca* Thunb. var. *gracilis* (Rehder & Wilson) A. Camus, Les Chênes 1: 285. 1938.

67 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).



In Fl. Hupehensis 1: 116. 1976, this taxon is elevated to the rank of species, and a new combination—*Quercus gracilis* (Rehder & Wilson) Wuzhi—is made. This name is invalid as a later homonym of *Quercus gracilis* Korth. Verh. Nat. Gesch. Bot. 207. 1844.

*Quercus myrsinifolia* Blume

729 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Quercus oxyodon* Miq.

576 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC); 1065 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Quercus spinosa* David ex Franchet

371 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1310 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

ULMACEAE

*Celtis biondii* Pampan.

432 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 789 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Celtis vandervoetiana* Schneider\*

1490 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Zelkova sinica* Schneider

1706 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

MORACEAE

*Broussonetia papyrifera* (L.) L'Hér. ex Vent.

414 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1585 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Ficus foveolata* Wallich var. *henryi* King ex Oliver, Hooker's Icon. Pl. 19: pl. 1824. 1889. (syn.: *F. sarmentosa* Buch.-Ham. ex J. E. Smith var. *henryi* (King) Corner (Gard. Bull. Singapore 18: 6. 1960.) in Fl. Hupehensis 1: 152. 1976.)

1603 (A, CM, HIB, PE, UC).

*Ficus heteromorpha* Hemsley

550 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1074 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1451 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Ficus impressa* Champ. (syn.: *F. sarmentosa* Buch.-Ham. ex J. E. Smith var. *impressa* (Champ.) Corner, Gard. Bull. Singapore 18: 6. 1960.)

1492 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

CANNABINACEAE

*Cannabis sativa* L.

651a (pistillate) (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 651b (staminate) (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Humulus scandens* (Lour.) Merr. (syn.: *H. japonicus* Sieb. & Zucc.)

1639 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



## URTICACEAE

*Boehmeria diffusa* Wedd.

482 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Boehmeria gracilis* C. H. Wright

793 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Elatostema ichangense* H. Schroter\*

1919 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Elatostema stewardii* Merr.

824 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Gonostegia hirta* (Blume) Miq.

1937 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lecanthus peduncularis* (Royle) Wedd.\*

494 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Oreocnide frutescens* (Thunb.) Miq. (syn.: *O. fruticosa* (Gaudich.) Hand.-Mazz.)

1638 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Parietaria micrantha* Ledeb. (syn.: *P. debilis* Forster var. *micrantha* (Ledeb.)

Wedd. in DC. Prodr. 16(1): 235<sup>45</sup>. 1869.)

1833 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pilea japonica* (Maxim.) Hand.-Mazz.

534 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pilea martinii* (Lévl.) Hand.-Mazz.

488 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Pilea plataniflora* C. H. Wright

1113 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1660 (A, HIB, KUN, NA, NAS, NY, PE, UC).

***Pilea sinofasciata*** C. J. Chen & B. Bartholomew, nom. nov., based on *Pilea fasciata* Franchet, Nouv. Arch. Mus. Hist. Nat. II. 10: 81. 1888, non Wedd. in DC. Prodr. 16(1): 120. 1869.

1362 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

## LORANTHACEAE

*Loranthus levinei* Merr.

1324 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

## ARISTOLOCHIACEAE

*Aristolochia heterophylla* Hemsley

1121 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Saruma henryi* Oliver

1592 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

## BALANOPHORACEAE

*Balanophora involucrata* Hooker f.

889 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1260 (HIB).



*Balanophora japonica* Makino

458 (HIB); 890 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

POLYGONACEAE

*Antenoron neofiliforme* (Nakai) Hara

422 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 764 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Polygonum amplexicaule* D. Don var. *sinense* Forbes & Hemsley, J. Linn. Soc., Bot. **26**: 333. 1891.

202 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 501 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Polygonum caespitosum* Blume

1347 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1956 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1957 (A, HIB, NA, PE).

*Polygonum ciliinerve* (Nakai) Ohwi (syn.: *P. multiflorum* Thunb. var. *ciliinerve* (Nakai) A. N. Steward, Contr. Gray Herb. **88**: 97. 1930.)

307 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Polygonum cuspidatum* Sieb. & Zucc.

437 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 724 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1578 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1626 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Polygonum hydropiper* L.

1954 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Polygonum multiflorum* Thunb.

440 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1657 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Polygonum muricatum* Meisner (syn.: *P. strigosum* R. Br. var. *muricatum* (Meisner) A. N. Steward, Contr. Gray Herb. **88**: 89. 1930.)

1955 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 2013 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Polygonum persicaria* L.\*

1521 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 2015 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Polygonum pilosum* (Maxim.) Forbes & Hemsley

41 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Polygonum thunbergii* Sieb. & Zucc.

1953 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

AMARANTHACEAE

*Achyranthes aspera* L.

562 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1501 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Achyranthes bidentata* Blume

491 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Celosia argentea* L.

1918 (A, HIB, NA, NAS, NY, PE).

#### PHYTOLACCACEAE

*Phytolacca acinosa* Roxb.

1826 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Phytolacca* cf. *polyandra* Batalin\*

723 (A, HIB, KUN, NAS, NY, PE, SFDH, UC, WH).

Nowicke (Ann. Missouri Bot. Gard. **55**: 294–364. 1968) did not see specimens of *Phytolacca polyandra* Batalin and therefore did not treat this species in her study of the Phytolaccaceae. Although our specimens have five (not eight) united carpels and sterile (not fertile) stamens, they agree most closely with the original description of that species. Nowicke admitted that her treatment of *Phytolacca* was not exhaustive and stated that the genus is in need of further, critical study.

#### CARYOPHYLLACEAE

*Cucubalus baccifera* L.

409 (A, HIB, PE, UC).

*Dianthus superbus* L.

144 (HIB); 945 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Silene fortunei* Vis.

780 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1409 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1917 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Silene linearifolia* Pampan.

973 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Silene tatarinowii* Regel (syn.: *Melandrium tatarinowii* (Regel) Y. W. Tsui)

71 (A, HIB, KUN, NA, NAS, NY, PE, UC); 386 (A, CM, HIB, KUN, NA, NAS, PE, UC); 1859 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### TETRACENTRACEAE

*Tetracentron sinense* Oliver

1183 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### EUPTELEACEAE

*Euptelea pleiosperma* Hooker & Thomson

105 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 216 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1151 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1549 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

#### RANUNCULACEAE

*Aconitum cannabifolium* Franchet

1290 (A, CM, HIB, KUN, NA, NAS, NY, PE).



*Aconitum hemisleyanum* Pritzl

69 (A, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 154 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 388 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1156 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1320 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1777 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Aconitum scaposum* Franchet

136 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 191 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 357 (A, HIB); 421 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC, WH).

*Actaea asiatica* Hara

413 (HIB); 1387 (A, HIB); 1835 (A, HIB, NA, PE).

*Anemone hupehensis* Lemoine

754 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Anemone tomentosa* (Maxim.) Péri

53 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Aquilegia oxysepala* Trautv. & Meyer\*

258 (A, HIB, KUN, NA, NAS, NY, PE, UC); 869 (A, HIB, KUN, NA, PE, UC).

*Cimicifuga acerina* (Sieb. & Zucc.) Tanaka

586 (A, CM, HIB, NA, NAS, PE); 622 (A, HIB); 1361 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cimicifuga foetida* L.\*

253 (A, HIB, NY, UC).

*Cimicifuga simplex* Wormsk.

57 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Clematis gratopsis* W. T. Wang

1439 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1905 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Clematis lasiandra* Maxim.

1 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 181 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 217 (A, CM, E, HIB, KUN, MO, NA, NAS, NY, PE, SFDH, UC, WH); 310 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 700 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1192 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1328 (A, HIB, KUN, NA, NAS, NY, PE); 1648 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Clematis otophora* Franchet

301 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC); 635 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1546 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Clematis uncinata* Champ. var. *coriacea* Pampan. Nuovo Giorn. Bot. Ital. 22: 288. 1915.

580 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Clematis urophylla* Franchet\*

1940 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Delphinium potaninii* Huth\*

405 (A, HIB, PE).

*Paeonia obovata* Maxim. var. *willmottiae* (Stapf) Stern, J. Roy. Hort. Soc. 68: 128. 1943.

197 (A, HIB); 385 (A, HIB, KUN, NA, NAS, PE, UC).



*Thalictrum przewalskii* Maxim.

159 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Thalictrum robustum* Maxim.

572 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Thalictrum uncinulatum* Franchet

148 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### LARDIZABALACEAE

*Akebia trifoliata* (Thunb.) Koidz.

677 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1089 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Decaisnea fargesii* Franchet

72 (A, CM, HIB, NY, PE); 618 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1055 (A, HIB, PE, UC).

*Holboellia fargesii* Réaumbourg

616 (A, HIB); 1005 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1704 (A, CM, HIB, NA, NAS, PE).

*Sinofranchetia chinensis* (Franchet) Hemsley

1241 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1879 (A, HIB, NY, PE, SFDH, UC).

#### BERBERIDACEAE

*Berberis circumserrata* (Schneider) Schneider

255 (A, CM, HIB, KUN, NA, NY, PE, UC).

*Berberis dasystachya* Maxim.

204 (A, HIB, KUN, NY, PE, UC); 341 (HIB); 888 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Berberis feddeana* Schneider\*

1782 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Berberis henryana* Schneider

373 (A, HIB, PE, UC); 1232 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Berberis julianae* Schneider

232 (A, CM, HIB, KUN, NAS, NY, PE, UC); 1804 (A, CM, HIB, KUN, NA, NY, PE).

*Berberis mitifolia* Stapf\*

1204 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1553 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1861 (A, HIB, KUN, NA, NAS, PE, SFDH, WH).

*Berberis sargentiana* Schneider

472 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1938 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Berberis triacanthophora* Fedde

643 (A, CM, HIB, KUN, NA, NAS, PE, UC).

*Berberis virgetorum* Schneider

2079 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Caulophyllum robustum* Maxim.

911 (HIB); 1202 (A, HIB, KUN, MO, NA, NAS, NY, PE, UC).



*Diphylleia sinensis* H. L. Li

910 (A, HIB).

*Epimedium davidii* Franchet

1869 (A, HIB).

*Nandina domestica* Thunb.

1101 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### MENISPERMACEAE

*Sinomenium acutum* (Thunb.) Rehder & Wilson

696 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1067 (A, CM, HIB, KUN, NA, NAS, NY, PE).

*Stephania sinica* Diels

698 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Tinospora sagittata* (Oliver) Gagnep.

1716 (A, HIB, PE).

#### MAGNOLIACEAE

*Magnolia sprengeri* Pampan.\*

1181 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### ILLICIACEAE

*Illicium henryi* Diels

512 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1028 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1491 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### SCHISANDRACEAE

*Schisandra glaucescens* Diels

86 (HIB); 101 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 199 (HIB); 331 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 382 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC, WH); 645 (A, CM, HIB, KUN, NA, PE, UC); 711 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC); 1389 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### LAURACEAE

*Actinodaphne* cf. *reticulata* Meisner var. *forrestii* Allen, Ann. Missouri Bot. Gard. 25: 412. 1937.

1070 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lindera communis* Hemsley

1423 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1650 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1679 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1906 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lindera fragrans* Oliver

1623 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lindera fruticosa* (Hemsley) Gamble



765 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1481 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lindera glauca* (Sieb. & Zucc.) Blume

447 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 782 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC).

*Lindera megaphylla* Hemsley

1900 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lindera obtusiloba* Blume

1308 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lindera subcaudata* (Merr.) Merr.\*

704 (A, HIB).

*Litsea ichangensis* Gamble

303 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 510 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 631 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1812 (A, CM, HIB, PE).

*Litsea* aff. *sericea* (Nees) Hooker f.\*

316 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 892 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1587 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1877 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Neolitsea confertifolia* (Hemsley) Merr.

412 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 583 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 603 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1027 (A, CM, HIB, KUN, NAS, NY, PE); 1085 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1495 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1608 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Phoebe neurantha* (Hemsley) Gamble

2045 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

PAPAVERACEAE

*Macleaya microcarpa* (Maxim.) Fedde

300 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Stylophorum lasiocarpum* (Oliver) Fedde

84 (A, HIB); 1064 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

FUMARIACEAE

*Corydalis davidii* Franchet

399 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 859 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Corydalis incisa* (Thunb.) Pers.

176 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

CRUCIFERAE

*Arabis pendula* L.

1153 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cardamine urbaniana* O. E. Schulz

1800 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Rorippa indica* (L.) Hieron.

1020 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

# CRASSULACEAE

*Sedum aizoon* L.

107 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1212 (A, HIB).

*Sedum amplibracteatum* K. T. Fu, Fl. Tsinlingensis **1**(2): 425. 1974. (a nomen novum for *S. bracteatum* Diels, non *S. bracteatum* Viv.)

203 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1001 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Sedum dielsii* Hamet

1634 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Sedum erythrostictum* Miq.\* (syn.: *S. telephium* L. subsp. *alboroseum* (Baker) Fröd. Acta Horti Gothob. **5**(Appendix): 61. 1930.)

1210 (A, HIB).

*Sedum filipes* Hemsley

589 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 776 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 974 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Sedum verticillatum* L.

173 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

# SAXIFRAGACEAE

*Astilbe rubra* Hooker & Thomson

75 (A, CM, HIB, NAS, PE, UC).

*Chrysosplenium lanuginosum* Hooker & Thomson\* (incl. *C. ciliatum* Franchet) 1206 (A, HIB).

*Chrysosplenium macrophyllum* Oliver

1208 (A, HIB).

*Chrysosplenium pilosum* Maxim. var. *valdepilosum* Ohwi, Repert. Spec. Nov. Regni Veg. **36**: 52. 1934.

1207 (A, HIB).

*Decumaria sinensis* Oliver

1454 (A, HIB, NA, NAS, NY, PE, UC); 1899 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Deutzia schneideriana* Rehder\*

1615 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Deutzia vilmorinae* Lemoine

16 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 149 (A, CM, HIB, NAS, NY, PE); 349 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 539 (A, CM, HIB, NA, NAS, PE); 1032 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Dichroa febrifuga* Lour.

1972 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Hydrangea aspera* D. Don subsp. *robusta* (Hooker & Thomson) McClint. Proc. Calif. Acad. Sci. **29**: 194. 1957.



370 (A, HIB, KUN, NA, NAS, NY, PE, UC); 606 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1197 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1353 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Hydrangea aspera* D. Don subsp. *strigosa* (Rehder) McClint. Proc. Calif. Acad. Sci. **29**: 193. 1957.

467 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 693 (A, HIB, KUN, NA, NAS, NY, PE, UC); 1106 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1913 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Hydrangea heteromalla* D. Don

128 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 184 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 370a (A); 735 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 884 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 899 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1341 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1529 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1772 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Hydrangea scandens* (L. f.) Sér. subsp. *chinensis* (Maxim.) McClint. Proc. Calif. Acad. Sci. **29**: 206. 1957.

2003 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Itea ilicifolia* Oliver

1107 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Parnassia delavayi* Franchet

37 (A, CM, HIB, KUN, NA, PE, UC).

*Parnassia wightiana* Wallich ex Arnott

1186 (A, HIB, PE, UC).

*Philadelphus incanus* Koehne

230 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 518 (A, HIB, NA, NAS, NY, PE); 748 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1026 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1614 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Philadelphus sericanthus* Koehne

188 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 956 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC).

*Ribes acuminatum* Wallich

40 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 112 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 158 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC, WH); 252 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Ribes fasciculatum* Sieb. & Zucc. var. *chinense* Maxim. Mélanges Biol. Bull. Phys.-Math. Acad. Imp. Sci. Saint-Pétersbourg **9**: 237. 1873; Bull. Acad. Imp. Sci. Saint-Pétersbourg **19**: 264. 1874.

1682 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Ribes moupinense* Franchet

647 (A, HIB, PE); 969 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Ribes* sp.

167 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rodgersia aesculifolia* Batalin

79 (A, HIB); 900 (A, CM, HIB, KUN, NA, PE).



*Saxifraga flabellifolia* Franchet

308 (A, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Saxifraga giraldiana* Engler var. *hupehensis* Engler, Bot. Jahrb. Syst. 29: 366. 1901.

26 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 172 (A, CM, HIB, NA, NAS, NY, PE, UC).

*Schizophragma integrifolium* Oliver

582 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1291 (A, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Tiarella polyphylla* D. Don

1864 (A, HIB, KUN, PE, UC).

PITTOSPORACEAE

*Pittosporum glabratum* Lindley var. *neriifolium* Rehder & Wilson, Pl. Wilsonianae 3: 328. 1916.

2030 (A, HIB).

*Pittosporum rehderianum* Gowda

478 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1066 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1438 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1640 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Pittosporum truncatum* Pritzl

1616 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

HAMAMELIDACEAE

*Corylopsis platypelta* Rehder & Wilson

1300 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Corylopsis sinensis* Hemsley

752 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Corylopsis veitchiana* Bean

2033 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Liquidambar acalycina* Chang, Bull. Sun Yat-sen Univ. 2: 33. 1959; Fl. Reip. Pop. Sinicae 35(2): 56. 1979.

1950 (A, HIB, NAS, NY, PE, UC).

*Sinowilsonia henryi* Hemsley

1483 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Sycopsis sinensis* Oliver

248 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

ROSACEAE

*Agrimonia pilosa* Ledeb.

451 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Cotoneaster acutifolius* Turcz.

96 (A, CM, HIB, NAS, NY, PE, UC); 344 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 365 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC,



WH); 857 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1551 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1731 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cotoneaster acutifolius* Turcz. var. *villosulus* Rehder & Wilson, Pl. Wilsonianae 1: 158. 1912.

13 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC, WH).

*Cotoneaster bullatus* Bios.

215 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC).

*Cotoneaster dielsianus* Pritzell

1016 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1044 (A, CM, HIB, KUN, NA, NAS, PE, UC); 1283 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1346 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Cotoneaster* aff. *dielsianus* Pritzell

1935 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cotoneaster divaricatus* Rehder\*

1318 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cotoneaster foveolatus* Rehder & Wilson\*

265 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 906 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC); 941 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1332 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1344 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1750 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Cotoneaster* aff. *foveolatus* Rehder & Wilson

1854 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cotoneaster horizontalis* Dcne.

100 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 375 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 779 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1609 (A, HIB, KUN, NA, NAS, NY, PE, UC); 1830 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1933 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Cotoneaster multiflorus* Bunge

1751 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1806 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1834 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cotoneaster obscurus* Rehder & Wilson\*

129 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 205 (A, CM, HIB, NA, PE, UC); 211 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 393 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Cotoneaster salicifolius* Franchet

676 (A, CM, HIB, KUN, NAS, PE, SFDH, UC, WH); 1086 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1907 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cotoneaster salicifolius* Franchet var. *rugosus* (Pritzell) Rehder & Wilson, Pl. Wilsonianae 1: 172. 1912. (syn.: *C. rugosus* Pritzell)

520 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1708 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Cotoneaster* aff. *zabellii* Schneider

575 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC); 1579 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cotoneaster* sp.

372 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1801 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Crataegus cuneata* Sieb. & Zucc.\*

1736 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Crataegus wilsonii* Sarg.

9 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 70 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 263 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 896 (A, CM, HIB, NAS, NY, PE); 1056 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1234 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Fragaria gracilis* A. Los.

164 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Kerria japonica* (L.) DC.

221 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 350 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 579 (A, CM, HIB, NA, NAS, NY, PE); 1279 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Malus kansuensis* (Batalin) Schneider\*

36 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 262 (A, HIB, PE, UC); 397 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 893 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Malus yunnanensis* (Franchet) Schneider\*

571 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1556 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1771 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Malus yunnanensis* (Franchet) Schneider var. *veitchii* Hort. ex Rehder, J. Arnold Arbor. 4: 115. 1923.

1301 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Malus* sp.

106 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 484 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 767 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1218 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, UC); 1298 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1314 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1745 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1807 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1885 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

The collections of *Malus* listed above have been quite difficult to identify, although all (with the possible exception of 1298) are referable to either *M. hupehensis* or *M. halliana* Koehne. It has become apparent, however, that the relationships of these two species are in need of careful assessment and resolution before the above-listed collections can be named with any assur-



ance. Unfortunately, time has not allowed more than a casual investigation of this problem, but it is hoped that further collaborative work can soon be undertaken in both China and the United States.

*Neillia sinensis* Oliver

135 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 470 (A, HIB); 678 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1077 (A, HIB, NY, PE).

*Photinia beauverdiana* Schneider

770 (A, CM, HIB, KUN, NAS, PE, UC); 1543 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1583 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC, WH); 1875 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Photinia beauverdiana* Schneider var. *notabilis* (Schneider) Rehder & Wilson, Pl. Wilsonianae 1: 188. 1912.

1022 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC, WH).

*Photinia parvifolia* (Pritzell) Schneider

2044 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 2081 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Photinia villosa* (Thunb.) DC.

1865 (A, HIB, NA, PE, SFDH, UC).

*Potentilla fruticosa* L.

120 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1184 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Potentilla leuconota* D. Don

937 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Prunus brachypoda* Batalin

967 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Prunus salicina* Lindley

139 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 336 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Pyracantha crenulata* (D. Don) Roemer

1903 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1961 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Pyracantha fortuneana* (Maxim.) H. L. Li

436 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 466 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1417 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1622 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1939 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Pyrus pyrifolia* (Burman f.) Nakai

847 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Pyrus serrulata* Rehder\*

1630 (A, CM, E, HIB, KUN, NAS, NY, PE, SFDH, UC, WH).

*Rosa banksiae* Aiton\*

442 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1410 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1632 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rosa banksiopsis* Baker

1778 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Rosa helenae* Rehder & Wilson

747 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Rosa henryi* Boulenger

783 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Rosa omeiensis* Rolfe

27 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 125 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rosa saturata* Baker

268 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 960 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rosa sertata* Rolfe

961 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Rosa* sp.

10 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 147 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 187 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 732 (A, HIB); 876 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 957 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1053 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1406 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1534 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1633 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1784 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1862 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1863 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1934 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

A situation similar to that mentioned under the unidentified collections of *Malus* exists with the undetermined collections of *Rosa*. Although for the most part the collections fall into two or three groups, unclear or unresolved species limits and the possibility of hybridization have prevented assured determinations and indicate the need for further work.

*Rubus amphidasys* Focke ex Diels

2076 (A, CM, HIB, NAS, NY, PE).

*Rubus flosculosus* Focke

5 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1545 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rubus ichangensis* Hemsley & Kuntze\*

551 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rubus innominatus* S. Moore

449 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Rubus lambertianus* Sér.\*

499 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 502 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 799 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1422 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1637 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC); 1936 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rubus lasiostylus* Focke

229 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1058 (A, HIB, KUN, NA, NAS, NY, PE); 1312 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



**Rubus lasiostylis** Focke var. **hubeiensis** Yü, Spongberg, & Lu, var. nov.

A varietate lasiostylo in drupeolis indumento minore praeditis, aurantiaco-rubrae, et stylo parte distili glabro deciduo, differt.

Differing from var. *lasiostylus* in having less densely pubescent, orange-red drupelets and distally glabrous, deciduous styles.

TYPE. China, western Hubei Province, Shennongjia Forest District (31°30'N, 110°30'E), on a steep, NW-facing slope above the road to Chuifeng Pass, elevation ca. 2780 m; shrub 1.5–2 m tall, fruits red, 1–1.5 cm across, the young stems grayish, bark on older stems brownish red, 26 August 1980, *Sino-Amer. Bot. Exped. 114* (holotype, PE; isotypes, A, HIB, KUN, NA, NAS, NY, SFDH, UC, WH).

ADDITIONAL SPECIMENS EXAMINED. **China.** HUBEI: Shennongjia Forest District (31°30'N, 110°30'E), NW-facing slope below Chuifeng Pass in *Sinarundinaria* thickets and in disturbed meadow with *Abies chensiensis*, elev. ca. 2900 m; shrubs with orange-red, sweet, edible fruits, 1980 *Sino-Amer. Bot. Exped. 155* (A, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rubus lasiostylus* var. *hubeiensis* can be distinguished from var. *lasiostylus* by its less densely pubescent drupelets, by its distally glabrous (vs. pubescent) styles that tend to be deciduous (vs. persistent) prior to drupelet maturity, and by the orange-red color (pinkish when dry) of the drupelets (vs. whitish; tannish when dry). Based on the limited material available for comparison, other characters that may be of significance include the relative lack of prickles on the floricanes and an apparent difference in stipule and infructescence-bract shape. In var. *lasiostylus* the floricanes are usually beset with numerous straight to slightly recurved, spreading prickles, and the stipules and bracts of the infructescence are narrowly lanceolate. By contrast, the stipules and bracts of var. *hubeiensis* tend to be ovate to suborbiculate.

As in *Rubus lasiostylus* var. *dizygos* Focke (*in* Pl. *Wilsonianae* 1: 53. 1911), the leaves on the flowering shoots of var. *hubeiensis* sometimes bear five (rather than three) leaflets. In other details of the vegetative parts, fruit aggregates, and seeds, var. *hubeiensis* agrees with var. *lasiostylus*.

**Rubus setchuenensis** Bur. & Franchet

1952 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

**Rubus simplex** Focke

1130 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

**Sorbaria arborea** Schneider

7 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 266 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 971 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1025 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

**Sorbus alnifolia** (Sieb. & Zucc.) K. Koch

377 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1302 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1400 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1779 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1855 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Sorbus caloneura* (Stapf) Rehder

753 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1097 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 2039 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Sorbus folgneri* (Schneider) Rehder

1008 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1476 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1870 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Sorbus hupehensis* Schneider

102 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 879 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1315 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Sorbus keissleri* Rehder

1285 (A, HIB, KUN, NA, NAS, NY, PE, UC).

*Sorbus koehneana* Schneider

880 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 964 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Sorbus xanthoneura* Rehder

719 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1317 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1342 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1739 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1776 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Sorbus zahlbruckneri* Schneider

1555 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1728 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Spiraea chinensis* Maxim.\*

1610 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Spiraea japonica* L. f. var. *acuminata* Franchet, Nouv. Arch. Mus. Hist. Nat. II. 8: 218. 1886; Pl. David. 2: 36. 1888.

8 (A, CM, HIB, KUN, NAS, NY, PE, SFDH, UC, WH); 444 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 781 (A, CM, HIB, NY, PE); 882 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Spiraea veitchii* Hemsley

269 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 389 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC); 860 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1155 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Stranvaesia amphidoxa* Schneider (syn.: *Photinia amphidoxa* (Schneider) Rehder & Wilson)

2001 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Stranvaesia davidiana* Dcne.\*

209 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 213 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 513 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 614 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 772 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1039 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1081 (A, CM, E, HIB, KUN,



NA, NAS, NY, PE, SFDH, UC, WH); 1496 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Stranvaesia davidiana* Dcne. var. *undulata* (Dcne.) Rehder & Wilson, Pl. Wilsonianae 1: 192. 1912.

2035 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### LEGUMINOSAE

*Amphicarpaea trisperma* Baker

707 (A, HIB); 786 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1661 (A, HIB, NA, PE).

*Bauhinia hupehana* Craib

1109 (HIB).

*Caesalpinia sepiaria* Roxb.

1114 (A, HIB).

*Campylotropis ichangensis* Schindler

565 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cercis chinensis* Bunge

1010 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1695 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cercis racemosa* Oliver\*

1115 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Dalbergia dyeriana* Prain & Harms

1428 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1624 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Dalbergia mimosoides* Franchet

803 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1421 (A, CM, HIB, PE); 1572 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Desmodium oldhamii* Oliver

1526 (A, HIB, KUN, NA, NAS, PE, UC).

*Desmodium podocarpum* DC. subsp. *podocarpum*

1525 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Desmodium podocarpum* DC. subsp. *fallax* (Schindler) Ohashi in Hara, Fl. E. Himalaya 2: 65. 1971. (see also Ohashi, 1973)

1068 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Desmodium podocarpum* DC. subsp. *oxyphyllum* (DC.) Ohashi in Hara, Fl. E. Himalaya 2: 65. 1971, var. *oxyphyllum*\*

804 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1499 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Indigofera amblyantha* Craib

337 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1732 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Indigofera pseudotinctoria* Matsum.

1407 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lespedeza buergeri* Miq.

1607 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1860 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Lespedeza cuneata* (Dum.-Cours.) G. Don

703 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lespedeza thunbergii* (DC.) Nakai\*

4 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 56 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1744 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Vicia cracca* L.

1134 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Vicia pseudo-orobus* Fischer & Meyer

1856 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### GERANIACEAE

*Geranium henryi* Kunth

11 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, WH); 65 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Geranium sibiricum* L.

1441 (A, CM, HIB, KUN, NA, NAS, PE, UC).

#### RUTACEAE

*Euodia rutacarpa* (Juss.) Benth. var. *bodinieri* (Dode) Huang, Acta Phytotax. Sinica 6: 113. 1957.

1947 (A, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Euodia rutacarpa* (Juss.) Benth. var. *officinalis* (Dode) Huang\*, Acta Phytotax. Sinica 6: 114. 1957.

1450 (A, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

In Hartley's recent revision (Gard. Bull. Sing. 34: 91-131. 1981) both of the above-mentioned taxa of *Euodia* are included in *Tetradium ruticarpum* (A. Juss.) Hartley. Hartley's revision should be consulted for the basis of the division of the genera *Tetradium* Lour. and *Euodia* J. R. & G. Forster, as well as *Melicope* J. R. & G. Forster.

*Zanthoxylum armatum* DC. (syn.: *Z. planispinum* Sieb. & Zucc.)

433 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 797 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1029 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1408 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Zanthoxylum dissitum* Hemsley

1602 (A, CM, HIB, KUN, NAS, NY, PE, UC); 1675 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Zanthoxylum undulatifolium* Hemsley

633 (A, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### POLYGALACEAE

*Polygala arillata* Buch.-Ham.

189 (A, HIB, NY, PE).



*Polygala tatarinowii* Regel

684 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC); 1688 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Polygala wattersii* Hance

1698 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

## EUPHORBIACEAE

*Acalypha australis* L.

1973 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Bischofia polycarpa* (Lévl.) Airy-Shaw

1103 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Euphorbia chrysocoma* Lévl. & Vaniot

1200 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Euphorbia hylonoma* Hand.-Mazz.

364 (A, HIB, KUN, NA, NAS, NY, PE); 1158 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Leptopus chinensis* (Bunge) Pojark. (syn.: *Andrachne chinensis* Bunge)

1613 (A, HIB, NA, PE); 1678 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Mallotus contubernalis* Hance

448 (A, CM, HIB, KUN, NAS, NY, PE, UC); 1644 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

## DAPHNIPHYLLACEAE

*Daphniphyllum longistylum* Chien

1468 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Daphniphyllum macropodum* Miq.\*

605 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

## BUXACEAE

*Buxus microphylla* Sieb. & Zucc. var. *sinica* Rehder & Wilson, Pl. Wilsonianae 2: 165. 1914.

223 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1397 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Pachysandra terminalis* Sieb. & Zucc.

309 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 648 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1203 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1330 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Sarcococca humilis* Stapf (syn.: *S. hookeriana* Baillon var. *humilis* Rehder & Wilson, Pl. Wilsonianae 2: 164. 1914.)

305 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, UC); 403 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 682 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1245 (A, HIB); 1350 (A, HIB, NY, PE); 1352 (A, CM, HIB, KUN, NA, PE); 1967 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).



*Sarcococca ruscifolia* Stapf

1912 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

ANACARDIACEAE

*Rhus chinensis* Miller

1445 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rhus verniciflua* Stokes

103 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

AQUIFOLIACEAE

*Ilex fargesii* Franchet

717 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1304 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1395 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1753 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1775 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Ilex macrocarpa* Oliver

1909 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Ilex macropoda* Miq.

1227 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Ilex pedunculosa* Miq.

741 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Ilex pernyi* Franchet

239 (A, HIB); 673 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 800 (A, CM, HIB, KUN, NA, NAS, NY, PE); 1094 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1131 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1625 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Ilex shennongjiaensis* T. R. Dudley & S. C. Sun, sp. nov.

A *Ilex sugerokii* Maxim. ex Japonia et Taiwania persimilis et manifeste affinis sed ramulis primo non nisi puberulis; gemmis terminalis brevis stipitata; foliis laminis aliquantum maioribus et crassioribus; petiolis et stipulis brevioribus; fructibus persaepe maioribus; calycibus maioribus glabris, sinibus non profundus, lobis maioribus eciliatis; stigmatibus maioribus sessilibus, lobis parus elevatis clare disjunctis aequae superpositis; pyrenis maioribus fere teretibus transversaliter circularis, dorsaliter bisulcatis et striatis, praecipue differt.

Single-trunked tree to 10 m tall, 25 cm d.b.h. Mature bark glossy, whitish gray. First-year branchlets rigid, reddish brown, glistening, very sparsely puberulent becoming glabrous, 1–1.5 mm in diameter; third- and fourth-year growth terete, glabrous, grayish brown, glossy, 3–4 mm in diameter; leaves borne predominantly on first- and second-year branchlets, rarely persisting on older growth. Terminal buds shortly stipitate, ovoid or ellipsoid, 3–4 mm long, acute; stipes 0.5–1 mm long, sparingly puberulent; bud scales glabrous or remotely puberulent, not ciliate along margins; internodes 2–6 mm long; stipules deciduous, subulate, 0.3–0.5 mm long, glabrous. Leaves



with petiole 2.5–3(–4) mm long, deeply grooved on adaxial surface, only sparsely puberulent; blade elliptic-ovate, 2.5–4(–5) by (1–)1.5–2.5(–3) cm, acute to subobtuse and shortly mucronulate at apex, mucro 0.2–0.5 mm long and amber colored, short-attenuate or truncate to occasionally briefly cuneate at base and sparingly puberulent near petiole, thickly coriaceous, dark green, glossy and glabrous on upper surface, dull yellow-green on lower surface, the lateral veins obscure, 6 or 7 pairs, the midvein minutely puberulent, flattened to complanate or somewhat impressed on upper surface, conspicuously elevated and glabrous on lower surface, the margin serrulate-crenulate along  $\frac{3}{4}$ – $\frac{1}{2}$  of distal portion, with 3 to 7 serrulations per cm. Flowers unknown. Infructescences solitary and axillary; fruiting peduncles erect, 1–1.5 mm long, rigid, glabrous, with 2 ovate, obtuse-cuspidate, glabrous prophylls at or above middle; pedicels 5.5–12 mm long, stout, rigid, more or less dilated toward base of fruit. Fruits spheroid and often oblate, 8–12 mm broad, dark cherry-red, glossy, glabrous, sweet tasting; calyces generally persistent, explanate, 4–5 mm across, glabrous, with shallow sinuses and 4 to 6 obtuse to subacute lobes, the lobes 1–1.5 by 0.5–1 mm, glabrous, with apices and margins entire; stigmas sessile, flattened, 1.5–2 mm in diameter, circular, with 4 (or 5) narrowly elliptic-fusiform, scarcely raised, separate lobes 1 by 0.2–0.3 mm. Pyrenes 4 or 5 per fruit, oblong, nearly circular in cross section, 4–5 by 2.5–3 mm; dorsal surface moderately bisulcate, with 2 thin, prominent, raised marginal ribs and 1 raised medial rib; ventral and lateral surfaces smooth; endocarps cartilaginous.

TYPE. China, western Hubei Province, Shennongjia Forest District (31°30'N, 110°30'E); infrequent between Yinpo and Qiaodonggou canyon, on bank along road between Jiuhuping Forest Farm and Bancang, elevation ca. 2100 m, 19 September 1980, *Sino-Amer. Bot. Exped. 1554* (holotype, PE; isotypes, A, CM, E, HIB, KUN, KYO, NA, NAS, NY, SFDH, UC, WH).

ADDITIONAL SPECIMENS EXAMINED. **China.** HUBEI: Shennongjia Forest District (31°30'N, 110°30'E); infrequent at Miaogou canyon, ca. 4 km N of Jiuhuping, elev. ca. 1768 m, in thicket along edge of stream, 1980 *Sino-Amer. Bot. Exped. 236* (A, HIB, NA, PE).

*Ilex shennongjiaensis* falls in ser. Cassinoides (Loes.) Hu of sect. PALTORIA (Ruiz & Pavon) Maxim. of subg. ILEX. The other Asiatic components of ser. Cassinoides are *I. pedunculosa* Miq., *I. rockii* S. Y. Hu, *I. yunnanensis* Franchet, *I. kirinsanensis* Nakai, and *I. sugerokii* Maxim. *Ilex shennongjiaensis* has foliage and fruit that suggest close affinity with *I. sugerokii*, but it can be distinguished from that species by the larger pyrenes that are dorsally sulcate and striate; the larger, earlier-ripening, bright red, glossy, sweet fruit; the larger, sessile stigmas with flattened, conspicuously separate lobes; the larger calyces with shallow sinuses and glabrous lobes; the shorter pedicels that are dilated at both ends; the glabrous peduncles bearing longer, eciliate prophylls; the shorter, glabrous, deciduous stipules; and the deeply grooved, shorter petioles.

The short, strongly grooved petioles of *Ilex shennongjiaensis* are also reminiscent of *I. kirinsanensis*, endemic to Mt. Kirin-san in Japan. Most of the features that distinguish *I. shennongjiaensis* from *I. sugerokii* also apply to



and separate *I. kirinsanensis*. The lower surfaces of the leaves of *I. kirinsanensis* are described as being glandular-punctate. After more material is studied, this taxon might realistically be relegated to infraspecific rank within *I. sugerokii*.

Loesener (1901) tentatively assigned a Chinese collection, *Farges 129*, from Jiangkouzhèn ("Tschen-keow-tin"), Sichuan Province, to *Ilex sugerokii* forma *brevipedunculata* Maxim. (= var. *brevipedunculata* (Maxim.) S. Y. Hu), commenting that it was intermediate between that form and *I. yunnanensis*. Hu (1949) regarded *Farges 129* as *I. yunnanensis* var. *gentilis* (Franchet) Loes. ex Diels.

*Ilex wilsonii* Loes.

2031 (A, CM, HIB, NA, NAS, PE).

*Ilex yunnanensis* Franchet var. *gentilis* (Franchet) Loes. ex Diels\*, Bot. Jahrb. Syst. **29**: 435. 1900; Nova Acta Acad. Caes. Leop.-Carol. German. Nat. Cur. **78**: 132. 1901.

646 (A, HIB, PE); 891 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1303 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1763 (A, HIB, KUN, NA, NAS, NY, PE, UC); 1773 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

CELASTRACEAE

*Celastrus angulatus* Maxim.

1012 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1646 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Celastrus gemmatus* Loes.

785 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC); 1220 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Celastrus glaucophyllus* Rehder & Wilson (syn.: *C. rugosus* Rehder & Wilson)

193 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 313 (A, HIB, KUN, NA, PE, UC); 894 (A, HIB, KUN, NA, NAS, NY, PE, UC).

*Celastrus orbiculatus* Thunb.

690 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1006 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Celastrus rosthornianus* Loes.

1282 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Euonymus acanthocarpus* Franchet

574 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC).

*Euonymus alatus* (Thunb.) Sieb.

131 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 347 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 516 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 795 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1152 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1284 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Euonymus cornutus* Hemsley

608 (A, HIB, NY, PE); 639 (A, CM, HIB, KUN, NA, NAS, PE); 865 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1289 (A, HIB).



*Euonymus crinitus* Pampan. (syn.: *E. elegantissimus* Loes. & Rehder)

1333 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Euonymus fortunei* (Turcz.) Hand.-Mazz.

1337 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Euonymus giraldii* Loes.\*

261 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Euonymus hamiltonianus* Wallich

137 (A, CM, HIB, NAS, NY, PE); 1023 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1054 (A, CM, HIB, KUN, NAS, NY, PE, SFDH, UC); 1233 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1552 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1749 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Euonymus kiautschovicus* Loes.

2075 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Euonymus maackii* Rupr.\*

887 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Euonymus oxyphyllus* Miq.

1288 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Euonymus phellomanes* Loes.

366 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 954 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Euonymus porphyreus* Loes.

864 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 965 (A, CM, HIB, KUN, PE, UC).

*Euonymus sanguineus* Loes.

1004 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1799 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1871 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Euonymus verrucosoides* Loes.

1527 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Euonymus verrucosoides* Loes. var. *viridiflora* Loes. & Rehder\*, Pl. Wilsonianae 1: 493. 1913.

398 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Microtropis triflora* Merr. & Freeman

2018 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Perrottetia racemosa* (Oliver) Loes.\*

561 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1902 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

## STAPHYLEACEAE

*Euscaphis japonica* (Thunb.) Kanitz

1942 (A, HIB).

*Staphylea bumalda* DC.

716 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Staphylea holocarpa* Hemsley

6 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1084 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).



## ICACINACEAE

*Hosiea sinensis* (Oliver) Hemsley & Wilson

1082 (A, HIB, KUN, NAS, NY, PE, SFDH, UC).

## ACERACEAE

*Acer amplum* Rehder

738 (A, CM, HIB, KUN, NA, NAS, PE).

*Acer caudatum* Wallich var. *multiserratum* (Maxim.) Rehder in Sarg. Trees Shrubs 1: 163. 1905.

110 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 161 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

According to Bean (Trees Shrubs Hardy Brit. Isles. ed. 8. 1: 220. 1970), the correct name of *Acer caudatum* Wallich is *A. papilio* King, the former name constituting a nomen ambiguum. Moreover, var. *multiserratum* is treated in the same work (1: 239) as a distinct species, *A. multiserratum* Maxim.; we have been unable to locate a proposal to treat this taxon at the varietal rank under *A. papilio*. Inasmuch as this problem is both taxonomic and nomenclatural, the varietal combination is not proposed here pending additional study of the taxonomy of the group, and the name is provisionally maintained as *Acer caudatum* var. *multiserratum*.

*Acer davidii* Franchet

517 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 536 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 679 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1125 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Acer erianthum* Schwerin

1041 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1531 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1781 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Acer flabellatum* Rehder

1127 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Acer franchetii* Pax

83 (A, HIB); 1024 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1240 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1761 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1828 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Acer griseum* (Franchet) Pax

1482 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1571 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1747 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Acer henryi* Pax

1740 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Acer maximowiczii* Pax

368 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 898 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).



*Acer mono* Maxim.

150 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Acer robustum* Pax

1359 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Acer sinense* Pax

1805 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Acer stachyophyllum* Hiern

302 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1018 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1211 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Acer sutchuenense* Franchet\*

222 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Dipteronia sinensis* Oliver

1063 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

## SABIACEAE

*Meliosma beaniana* Rehder & Wilson

1007 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Meliosma dilleniifolia* (Wallich ex Wight & Arnott) Walp. subsp. *cuneifolia* (Franchet) Beus. *Blumea* 19: 442. 1971.

212 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1198 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1868 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Meliosma dilleniifolia* (Wallich ex Wight & Arnott) Walp. subsp. *flexuosa* (Pampan.) Beus.\* *Blumea* 19: 444. 1971.

1100 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1949 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Meliosma veitchiorum* Hemsley

1498 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

## BALSAMINACEAE

*Impatiens blephorosepala* Pritzell ex Diels\*

1246 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Impatiens dicentra* Franchet

55 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC); 560 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 601 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 858 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Impatiens* cf. *exiguiflora* Hooker f.

1960 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Impatiens pterosepala* Pritzell ex Diels

58 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 77 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 559 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 766 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1003 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1037 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Impatiens siculifera* Hooker f.\*

1090 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Impatiens stenosepala* Pritzl ex Diels

558 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Impatiens sutchuanensis* Franchet ex Hooker f.\*

17 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 51 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

RHAMNACEAE

*Berchemia flavescens* (Wallich) Brongn.

1539 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1798 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Berchemia floribunda* (Roxb.) Brongn.

737 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rhamnus crenatus* Sieb. & Zucc.

771 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1194 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1488 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1702 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1880 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rhamnus davuricus* Pallas

2024 (A, HIB, NA, PE).

*Rhamnus dumetorum* Schneider\*

1628 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rhamnus esquirolii* Lévl.\*

1683 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rhamnus iteinophyllus* Schneider

1019 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1047 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rhamnus leptophyllus* Schneider

508 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 522 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 628 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 629 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1021 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1336 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rhamnus utilis* Dcne.

465 (A, HIB); 1327 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1419 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1541 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

VITACEAE

*Ampelopsis megalophylla* Diels & Gilg

1354 (A, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cayratia oligocarpa* (Lévl. & Vaniot) Gagnep.\*

1542 (A, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cayratia pseudotrifolia* W. T. Wang

474 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1494 (A, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1697 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Parthenocissus henryana* (Hemsley) Diels & Gilg

1694 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Parthenocissus himalayana* (Royle) Planchon

1036 (A, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Tetrastigma hemsleyanum* Diels & Gilg

2010 (A, CM, HIB, NAS, PE, UC).

*Tetrastigma obtectum* Planchon

1621 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC).

*Tetrastigma obtectum* (Wallich) Planchon var. *pilosum* Gagnep. Notul. Syst. Paris 1: 323. 1911.

1596 (A, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Vitis betulifolia* Diels & Gilg\*

192 (A, HIB, NAS, PE, UC); 231 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 334 (A, HIB, KUN, NA, NAS, NY, PE, UC); 1313 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Vitis piasezkii* Maxim. var. *pagnuccii* (Romanet ex Planchon) Rehder, J. Arnold Arbor. 3: 223. 1922.

226 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 650 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1049 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1345 (A, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1355 (A, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1734 (A, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

## TILIACEAE

*Grewia biloba* D. Don

1647 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Tilia chinensis* Maxim.

395 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1307 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1319 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1533 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Tilia oliveri* Szysz. var. *cinerascens* Rehder & Wilson, Pl. Wilsonianae 2: 367. 1915.

1119 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1120 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

## ACTINIDIACEAE

*Actinidia callosa* Lindley\*

473 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1710 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Actinidia callosa* Lindley var. *henryi* Maxim. Trudy Imp. S.-Petersburgsk. Bot. Sada 11: 36. 1890.

249 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Actinidia chinensis* Planchon

469 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 749 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 806 (A, HIB).



*Actinidia chinensis* Planchon var. *hispida* C. F. Liang, Acta Phytotax. Sinica  
13: 33. 1975.

237 (HIB).

*Actinidia polygama* (Sieb. & Zucc.) Maxim.

74 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Actinidia polygama* (Sieb. & Zucc.) Maxim. var. *lecomtei* (Nakai) H. L. Li, J.  
Arnold Arbor. 33: 22. 1952.

339 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Actinidia tetramera* Maxim.

839a (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Clematoclethra* cf. *franchetii* Komarov

872 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Clematoclethra hemsleyi* Baillon

640 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 944 (A, CM, E, HIB,  
KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1532 (A, CM, E, HIB, KUN, NA, NAS,  
NY, PE, SFDH, UC, WH).

*Clematoclethra lanosa* Rehder\*

1752 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

#### THEACEAE

*Camellia cuspidata* (Kochs) Veitch

801 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 2037 (A, HIB,  
NA, NAS, PE, UC).

*Eurya alata* Kobuski

1447 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1489 (A, CM, E, HIB,  
KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Eurya brevistyla* Kobuski

521 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Eurya loquaiana* Dunn

2028 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Eurya obtusifolia* Chang

2004 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Stewartia sinensis* Rehder & Wilson

1504 (A, CM, HIB, NY, PE); 1568 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH,  
UC, WH).

#### GUTTIFERAE

*Hypericum ascyron* L.

363 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 791 (A, CM,  
HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Hypericum* cf. *attenuatum* Choisy

108 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Hypericum patulum* Thunb.

2021 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Hypericum perforatum* L.

396 (A, HIB, KUN, NAS, NY, PE, UC); 1050 (A, CM, E, HIB, KUN, NA, NAS, NY,  
PE, SFDH, UC, WH).



## VIOLACEAE

*Viola grypoceras* A. Gray var. *pubescens* Nakai\*, Bot. Mag. Tokyo **36**: 55, 89. 1922.

1502 (A, HIB).

*Viola prionantha* Bunge

1645 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Viola stewardiana* W. Becker

1493 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

## FLACOURTIACEAE

*Carrierea calycina* Franchet

245 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

## STACHYURACEAE

*Stachyurus chinensis* Franchet

554 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1078 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1424 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Stachyurus chinensis* Franchet var. *latus* H. L. Li, Bull. Torrey Bot. Club **70**: 627. 1943.

130 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 194 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 600 (A, HIB, KUN, NAS, NY, PE, SFDH, UC, WH); 1128 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

## BEGONIACEAE

*Begonia evansiana* Andrews

493 (A, HIB).

*Begonia sinensis* A. DC.

498 (A, HIB, KUN, NA, PE, UC); 1642 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Begonia* sp.

2012 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

## ELAEAGNACEAE

*Elaeagnus henryi* Warb.

2077 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Elaeagnus lanceolata* Warb.

95 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 145 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 227 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 459 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1030 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Elaeagnus umbellata* Thunb.

1182 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1196 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



LYTHRACEAE

*Rotala indica* (Willd.) Koehne  
2084 (A, HIB).

NYSSACEAE

*Davidia involucrata* Baillon var. *vilmoriniana* (Dode) Wangerin in Engler, Pflanz. IV. 220a (Heft 41): 19. 1910.  
1473 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

ALANGIACEAE

*Alangium chinense* (Lour.) Harms

452 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1601 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1631 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Alangium platanifolium* (Sieb. & Zucc.) Harms

604 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1738 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

***Alangium sinicum* (Nakai) S. Y. Hu, Spongberg, & Z. Cheng, comb. nov.\***

BASIONYM: *Marlea sinica* Nakai, Fl. Sylv. Koreana 17: 29. 1928.

1017 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1096 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1703 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

Two species of *Alangium*, *A. chinense* (Lour.) Harms and *A. platanifolium* (Sieb. & Zucc.) Harms, have been credited to the Shennongjia Forest District (Anonymous, 1980) and Hubei Province (Bloembergen, 1939, map on p. 163). Our field activities confirmed the presence of these species in the Shennongjia area but also revealed a third taxon that appeared distinct from both *A. chinense* and *A. platanifolium*. Subsequent studies and a comparison of the Shennongjia collections with specimens in the Harvard University Herbaria confirm this third taxon, which (based on specimens at A and GH) is not confined to western Hubei but is widely distributed in China in Shaanxi, Shandong, Shanxi, Henan, Jiangsu, Hubei, Guizhou, and Yunnan provinces.

S. Y. Hu, in earlier unpublished studies utilizing specimens at A and GH, also recognized this third species and stated that Nakai (1928) had provided it with a name under the genus *Marlea*. The appropriate new combination under *Alangium* is made here. The following key, based primarily on specimens collected from western Hubei but supplemented by other Chinese specimens, will aid in distinguishing the three species.

Key to the Species of *Alangium* in the Shennongjia  
Forest District

1. Peduncles 1.3–1.6 cm long; pedicels 1.3–1.6 mm long; corollas 0.8–1.9 cm long; styles pubescent.
2. Ovaries and fruits 1-celled; branchlets and petioles sparingly pubescent, leaf surfaces glabrous except for tufts of hairs in vein axils. . . . . *A. sinicum*.



2. Ovaries and fruits 2-celled; branchlets, petioles, and leaf surfaces pubescent. .... *A. chinense*.  
 1. Peduncles 3.2–3.5 cm long; pedicels 2–3.8 cm long; corollas 2.8–3.7 cm long; styles glabrous. .... *A. platanifolium*.

## ONAGRACEAE

*Circaea alpina* L. subsp. *imaicola* (Ascherson & Magnus) Kitamura, Fl. Afghanistan, 279. 1960.

28 (A, HIB).

*Circaea erubescens* Franchet & Sav.

850 (A, CM, E, HIB, KUN, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Circaea glabrescens* (Pampan.) Hand.-Mazz.\*

133 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 419 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Circaea mollis* Sieb. & Zucc.

851 (A, CM, HIB, PE); 1636 (A, CM, HIB, KUN, NA, PE).

*Circaea repens* Wallich ex Ascherson & Magnus\*

1157 (A, CM, E, HIB, KUN, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Epilobium cephalostigma* Hausskn.

85 (A, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 119 (A, CM, HIB, KUN, NA, NAS, PE, UC).

*Epilobium* aff. *nepalense* Hausskn.\*

318 (A, CM, HIB, KUN, NA, NAS, NY, PE).

*Epilobium parviflorum* Schreber

1161 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1832 (A, CM, E, HIB, KUN, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Epilobium sinense* Lévl.\*

24 (A, HIB, KUN, NAS, PE); 319 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 380 (A, HIB, NAS, NY, PE, UC); 599 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 722 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1013 (A, CM, HIB, KUN, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1831 (A, CM, E, HIB, KUN, MO, NA, NAS, NY, PE, SFDH, UC, WH).

## ARALIACEAE

*Acanthopanax giraldii* Harms

115 (A, CM, E, HIB, NAS, PE, UC); 160 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Acanthopanax henryi* (Oliver) Harms

1195 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1338 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Acanthopanax leucorrhizus* (Oliver) Harms var. *fulvescens* Harms & Rehder, Pl. Wilsonianae 2: 558. 1916.

185 (A, CM, HIB, KUN, NY, PE, UC); 367 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 905 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1392 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).



*Acanthopanax leucorrhizus* (Oliver) Harms var. *scaberulus* Harms & Rehder, Pl. Wilsonianae 2: 558. 1916.

975 (A, HIB, NY, PE, UC).

*Acanthopanax setchuenensis* Harms ex Diels

109 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 219 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1129 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1757 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1797 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Acanthopanax trifoliatum* (L.) Merr.

1102 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Aralia chinensis* L.

636 (A, HIB); 1123 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Aralia echinocaulis* Hand.-Mazz.\*

381 (A, CM, HIB, NA, NY, PE, UC).

*Hedera nepalensis* K. Koch var. *sinensis* (Tobler) Rehder, J. Arnold Arb. 4: 250. 1923.

702 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC, WH); 1083 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Nothopanax davidii* (Franchet) Harms ex Diels

299 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 675 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1015 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1088 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1627 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 2042 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Panax pseudo-ginseng* Wallich (intermediate between vars. *bipinnatifidus* (Seem.) H. L. Li (Sargentia 2: 118. 1942) and *japonicus* (C. A. Meyer) Hoo & Tseng)

314 (A, HIB).

*Panax pseudo-ginseng* Wallich var. *japonicus* (C. A. Meyer) Hoo & Tseng, Acta Phytotax. Sinica 11: 437. 1973.

1803 (A, HIB, NAS, NY, PE).

## UMBELLIFERAE

*Angelica pubescens* Maxim.

1487 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Angelica* sp.

256 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1580 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Bupleurum chinense* DC.

1641 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Bupleurum longicaule* Wallich ex DC. var. *franchetii* H. Boiss. Bull. Soc. Bot. France 53: 425. 1906.

1224 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Bupleurum longicaule* Wallich ex DC. var. *giraldii* Wolff\* in Engler, Pflanzenr. IV. 228(Heft 43): 123. 1910.

111 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 254 (A, CM, E,



HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 949 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Bupleurum longiradiatum* Turcz. var. *porphyranthum* Shan & Y. Li, Acta Phytotax. Sinica **12**: 270. 1974.

404 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 903 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1213 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Bupleurum petiolatum* Franchet\*

564 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cryptotaenia japonica* Hassk. (syn.: *C. canadensis* (L.) DC. var. *japonica* (Hassk.) Makino, Bot. Mag. Tokyo **22**: 175. 1908.)

424 (A, HIB); 549 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Heracleum acuminatum* Franchet\*

1774 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC); 1810 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Heracleum moellendorffii* Hance\*

1253 (A, HIB, NA, NAS, PE, UC); 1813 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Heracleum yungningense* Hand.-Mazz.

1254 (A, HIB).

*Ligusticum daucoides* Franchet\*

948 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Ligusticum sinense* Oliver

116 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 138 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1811 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Melanosciadum pimpinelloideum* H. Boiss.\*

417 (A, HIB, NY, PE, UC); 686 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC); 1076 (A, HIB, NAS, NY, PE, UC); 1814 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Nothosmyrnum japonicum* Miq. var. *sutchuensis* H. Boiss.\* Bull. Soc. Bot. France **61**: 349. 1909.

654 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1201 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1242 (A, CM, HIB, KUN, NAS, PE, UC).

*Oenanthe dielsii* H. Boiss.

1458 (A, CM, HIB, KUN, NAS, NY, PE, SFDH, UC).

*Peucedanum praeruptorum* Dunn

140 (HIB); 464 (A, HIB, PE, UC).

*Pimpinella arguta* Diels

569 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1252 (A, HIB).

*Pimpinella diversifolia* DC.

146 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Pimpinella diversifolia* DC. var. *stolonifera* Hand.-Mazz.\* Symb. Sinicae **7**: 714. 1933.

699 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).



*Pleurospermum giraldii* Diels\*

178 (A, HIB, PE, UC).

*Sanicula orthacantha* S. Moore

506 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

CORNACEAE

*Aucuba chinensis* Bentham\*

615 (A, HIB, NA); 1676 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1756 (A, CM, HIB, KUN, NAS, NY, PE, UC); 1901 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, WH).

*Cornus chinensis* Wangerin (syn.: *Macrocarpium chinense* (Wangerin) Hutch.)

1696 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cornus controversa* Hemsley

19 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 644 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1014 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cornus kousa* Hance (syn.: *Dendrobenthamia japonica* (DC.) Fang var. *chinensis* (Osborn) Fang, Acta Phytotax. Sinica 2: 105. 1953.)

224 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 784 (A, HIB); 1244 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1316 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cornus kousa* Hance var. *angustata* Chun, Sunyatsenia 1: 285. 1934. (syn.: *Dendrobenthamia angustata* (Chun) Fang, Acta Phytotax. Sinica 2: 95. 1953.)

2032 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cornus macrophylla* Wallich

369 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 883 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Cornus paucinervis* Hance

1629 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Helwingia chinensis* Batalin

453 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1897 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH).

*Helwingia japonica* (Thunb.) Dietr. var. *japonica*

195 (A, CM, HIB, KUN, NA, NAS, NY, PE); 355 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Helwingia japonica* (Thunb.) Dietr. var. *hypoleuca* Hemsley ex Rehder, Pl. Wilsonianae 2: 570. 1916.

1071 (A, HIB, PE, UC).

*Helwingia japonica* (Thunb.) Dietr. (intermediate between vars. *japonica* and *hypoleuca*)

862 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

CLETHRACEAE

*Clethra fargesii* Franchet

485 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 773 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1276 (A, CM, HIB, KUN, NA,



NAS, NY, PE, SFDH, UC, WH); 1469 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

# PYROLACEAE

*Chimaphila japonica* Miq.

912 (A, HIB).

*Monotropa hypopithys* L.

867 (A, CM, HIB, NAS, NY, PE, UC).

*Pyrola decorata* Andres

1250 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

# ERICACEAE

*Enkianthus chinensis* Franchet

626 (HIB); 718 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH);

1132 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1311 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Enkianthus serrulatus* (Wilson) Schneider

2014 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lyonia ovalifolia* (Wallich) Drude var. *elliptica* (Sieb. & Zucc.) Hand.-Mazz. Symb. Sinicae 7(4): 788. 1936.

1394 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pieris formosa* (Wallich) D. Don

769 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1474 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Rhododendron argyrophyllum* Franchet subsp. *hypoglaucum* (Hemsley) Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 329. 1979.

609 (A, HIB, KUN, NAS, NY, PE, SFDH, UC, WH); 1322 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1758 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rhododendron augustinii* Hemsley

578 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 739 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC); 1748 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1780 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rhododendron concinnum* Hemsley

875 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rhododendron fargesii* Franchet

124 (A, HIB, KUN, NA, NAS, PE, UC); 942 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rhododendron fortunei* Lindley subsp. *discolor* (Franchet) Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 330. 1979.

2040 (A, HIB).

*Rhododendron maculiferum* Franchet

123 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 863 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 943 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Rhododendron mariesii* Hemsley & Wilson

787 (A, HIB, PE).

*Rhododendron micranthum* Turcz.

208 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Rhododendron simsii* Planchon

774 (A, HIB); 1425 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1932 (A, HIB, PE).

*Rhododendron sutchuenense* Franchet

1231 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Vaccinium henryi* Hemsley

1497 (A, CM, E, HIB, KUN, KYO, NAS, NY, PE, SFDH, UC, WH).

*Vaccinium japonicum* Miq. var. *sinicum* (Nakai) Rehder, J. Arnold Arbor. 5: 56. 1924. (syn.: *Hugeria vaccinioides* (Lévl.) Hara)

730 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1475 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### MYRSINACEAE

*Ardisia crenata* Sims

1455 (A, HIB); 1620 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1677 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Ardisia japonica* (Thunb.) Blume

1926 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH).

*Myrsine africana* L.

479 (A, HIB, NA, NY, PE).

#### PRIMULACEAE

*Androsace henryi* Oliver

1456 (HIB).

*Lysimachia christinae* Hance

359 (A, HIB).

*Lysimachia clethroides* Duby

727 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1503 (A, HIB, NA, NAS, NY, PE, UC).

*Lysimachia congestiflora* Hemsley

1093 (A, HIB, KUN, NA, NAS, NY, PE, UC).

*Lysimachia stenosepala* Hemsley

200 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 570 (A, HIB, PE, UC).

*Primula ovalifolia* Franchet

1472 (A, CM, HIB, NA, NAS, PE, UC).

#### EBENACEAE

*Diospyros lotus* L.

1478 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1605 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



## SYMPLOCACEAE

*Symplocos anomala* Brand\*

1693 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Symplocos lancifolia* Sieb. & Zucc.

2019 (A, CM, HIB, PE).

*Symplocos paniculata* (Thunb.) Miq.

744 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1217 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1530 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1851 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC, WH); 1886 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC).

## STYRACACEAE

*Styrax hemsleyana* Diels\*

348 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1133 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1390 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Styrax japonica* Sieb. & Zucc.

763 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1484 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

## OLEACEAE

*Forsythia suspensa* (Thunb.) Vahl

694 (HIB); 1707 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Fraxinus paxiana* Lingelsh.\*

1538 (A, CM, HIB, PE).

*Jasminum floridum* Bunge

1606 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Jasminum lanceolarium* Roxb.

1440 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1910 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Jasminum urophyllum* Hemsley

2078 (A, HIB, KUN, NA, NY, PE, UC).

*Ligustrum acutissimum* Koehne

242 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 340 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1031 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1216 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Ligustrum henryi* Hemsley

1911 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Ligustrum obtusifolium* Sieb. & Zucc.\*

1735 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Ligustrum quihoui* Carrière

1444 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Osmanthus armatus* Diels

691 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 692 (A, HIB).



*Osmanthus fragrans* Lour.\* (collected from a plant in cultivation)

1575 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Syringa reflexa* Schneider\*

264 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 908 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 955 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

#### LOGANIACEAE

*Buddleja albiflora* Hemsley

257 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Buddleja davidii* Franchet

671 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1418 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

#### GENTIANACEAE

*Gentiana panthaica* Burkill\*

170 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Gentianopsis scabromarginata* (H. Sm.) Ma

34 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Halenia elliptica* D. Don var. *elliptica*

267 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 871 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Halenia elliptica* D. Don var. *grandiflora* Hemsley, J. Linn. Soc., Bot. **26**: 141. 1890.

683 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 856 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1215 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lomatogonium bellum* (Hemsley) H. Sm.\*

174 (A, CM, HIB, KUN, NY, PE, SFDH, UC); 946 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Swertia bimaculata* (Sieb. & Zucc.) Hooker & Thomson

180 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 228 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 317 (A, CM, HIB, KUN, NAS, NY, PE, UC); 1958 (A, CM, HIB, NY, PE).

*Swertia punicea* Hemsley\*

1595 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Swertia tetragona* Edgew.\*

1850 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

Collection no. 1850 was mistakenly distributed as *Swertia punicea*; the two plants are quite different.

*Tripterospermum affine* (Wallich) H. Sm.

39 (A, CM, HIB, NAS, NY, PE); 143 (A, CM, HIB, KUN, PE, UC); 566 (A, HIB, NA, PE); 1927 (A, CM, HIB, NA, NAS, NY, PE).



## ASCLEPIADACEAE

*Cynanchum auriculatum* Royle ex Wight

1225 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cynanchum inamoenum* (Maxim.) Loes.

634 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Metaplexis hemsleyana* Oliver (syn.: *M. sinensis* (Hemsley) Hu)

439 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1420 (A, CM, HIB, NAS, NY, PE); 1649 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

## CONVOLVULACEAE

*Cuscuta japonica* Choisy

1045 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1570 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Porana racemosa* Roxb.

1443 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

## BORAGINACEAE

*Cynoglossum zeylanicum* (Vahl) Thunb.

379 (A, HIB, NAS, NY, PE, UC); 790 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

## VERBENACEAE

*Callicarpa bodinieri* Lévl. var. *bodinieri*

408 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1681 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 2007 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 2060 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 2080 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Callicarpa bodinieri* Lévl. var. *giraldii* (Hesse ex Rehder) Rehder, J. Arnold Arbor. 15: 322. 1934.

846 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Caryopteris incana* (Thunb.) Miq.

1656 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Clerodendrum bungei* Steudel

1928 (A, CM, HIB, NAS, PE, UC).

*Clerodendrum trichotomum* Thunb. var. *trichotomum*

401 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 602 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1878 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Clerodendrum trichotomum* Thunb. var. *fargesii* (Dode) Rehder, Pl. Wilsonianae 3: 376. 1916.

848 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



## LABIATAE

*Clinopodium polycephalum* (Vaniot) C. Y. Wu & Hsuan\*, Observ. Fl. Hwangshanicum, 168. 1965 (citation incorrect in Index Kewensis).

1968 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Elsholtzia ciliata* (Thunb.) Hylander

1135 (A, HIB, KUN, NA, NY, PE); 1518 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1962 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Elsholtzia cypriani* (Pampan.) S. Chow\*, Observ. Fl. Hwangshanicum, 170.

1965 (citation incorrect in Index Kewensis).

1685 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Elsholtzia flava* Benth

1945 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Elsholtzia fruticosa* (D. Don) Rehder

220 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1746 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Kinostemon ornatum* (Hemsley) Kudo (syn.: *Teucrium ornatum* Hemsley)

420 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Leonurus artemisia* (Lour.) S. Y. Hu (incl. *L. japonicus* Hylander)

746 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Mosla scabra* (Thunb.) C. Y. Wu & H. W. Li

1965 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Origanum vulgare* L.

568 (A, HIB, NA, PE); 866 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Phlomis umbrosa* Turcz.

113 (A, HIB, KUN, NA, PE, UC); 352 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1866 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rabdosia excisoides* (Sun ex C. H. Hu) C. Y. Wu & H. W. Li

142 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 206 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rabdosia nervosa* (Hemsley) C. Y. Wu & H. W. Li

1351 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Salvia maximowicziana* Hemsley

182 (A, CM, HIB, KUN, NA, NAS, PE, UC); 376 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

## SOLANACEAE

*Lycianthes lysimachioides* (Wallich) Bitter

617 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Physalis alkekengi* L. var. *franchetii* (Mast.) Makino, Bot. Mag. Tokyo 22: 34. 1908.

475 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1550 (A, HIB, NY, PE).

*Scopolia sinensis* Hemsley (syn.: *Atropanthe sinensis* (Hemsley) Pascher)

483 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).



*Solanum lyratum* L.

1576 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Solanum nigrum* L.

429 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Solanum pittosporifolium* Hemsley

1278 (A, CM, HIB, NA, NAS, PE).

## SCROPHULARIACEAE

*Hemiphragma heterophyllum* Wallich\*

166 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Melampyrum roseum* Maxim. var. *obtusifolium* (Bonati) Hong, Fl. Reip. Pop. Sinicae 67(2): 367. 1979.

1853 (A, CM, E, HIB, KUN, KYO, NA, NAS, PE, SFDH, UC, WH).

*Mimulus tenellus* Bunge

1770 (A, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pedicularis holocalyx* Hand.-Mazz.

78 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Pedicularis resupinata* L.

567 (A, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1214 (A, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Pedicularis torta* Maxim.

169 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC, WH); 259 (A, HIB, KUN, NA, NAS, NY, PE, UC); 868 (A, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Scrophularia henryi* Hemsley\*

177 (A, HIB, PE).

*Veronicastrum caulopterum* (Hance) Yamazaki

2008 (A, HIB, KUN, NA, NY, PE, UC).

## Unidentified Scrophulariaceae

169a (A).

## OROBANCHACEAE

*Orobanche coerulescens* Stephan

901 (HIB).

## GESNERIACEAE

*Hemiboea subcapitata* C. B. Clarke

407 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Lysionotis pauciflorus* Maxim.

755 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1705 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Paraboea sinensis* (Oliver) B. L. Burt\*, Notes Roy. Bot. Gard. Edinburgh 38: 471. 1980.

1715 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



ACANTHACEAE

*Asystasiella chinensis* (S. Moore) E. Hossain

1680 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

PHRYMACEAE

*Phryma leptostachya* L. var. *asiatica* Hara, Enum. Spermatophyt. Jap. 1: 297. 1948.

762 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

RUBIACEAE

*Anotis hirsuta* (L. f.) Boerl.

2006 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Emmenopterys henryi* Oliver

243 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Leptodermis* aff. *oblonga* Bunge

1700 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

Collection no. 1700 is tentatively assigned to *Leptodermis oblonga* Bunge. There appears to be considerable confusion concerning the Chinese species, especially with regard to fruiting material, and the genus is in need of careful study both in the field and in the herbarium.

*Leptodermis wilsonii* Hort. ex Diels\*

581 (A, HIB, KUN, NA, PE, UC).

*Ophiorrhiza japonica* Blume

509 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC, WH); 1087 (A, CM, HIB, KUN, NAS, NY, PE, SFDH, UC, WH); 1449 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Paederia scandens* (Lour.) Merr.

511 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1072 (A, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rubia cordifolia* L.

1306 (A, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

CAPRIFOLIACEAE

*Abelia engleriana* (Graebner) Rehder

76 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 653 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Abelia* sp.

1741 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Dipelta floribunda* Maxim.

1611 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1684 (A, HIB).

*Lonicera gynochlamydea* Hemsley

68 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 225 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 411 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 642 (A, HIB, NA, NAS, PE, UC); 680 (A, CM, E, HIB, KUN,



NA, NAS, NY, PE, SFDH, UC, WH); 1040 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1073 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1281 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1467 (HIB); 1762 (A, CM, HIB, NA, NAS, PE); 1825 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lonicera henryi* Hemsley\*

240 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 342 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 612 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 736 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1046 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1095 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lonicera japonica* Thunb.

443 (A, HIB).

*Lonicera koehneana* Rehder

315 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 345 (A, HIB, NA, PE); 394 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 907a (A, NA, UC); 1802 (A, HIB, PE, UC).

Collection no. 907a was distributed as *Lonicera koehneana* Rehder var. *longipes* Rehder. This name was apparently never published; there is no type at A, and the single specimen bearing this name was not determined by Rehder. Moreover, the varietal name does not appear in Rehder's published writings on *Lonicera*.

*Lonicera longa* Rehder\*

260 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Lonicera maackii* Maxim.

441 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 471 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1442 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1452 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1584 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1612 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lonicera nervosa* Maxim.

157 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 966 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Lonicera* cf. *nervosa* Maxim.

251 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lonicera pileata* Oliver

705 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1099 (A, HIB, NA, NAS, PE, UC); 1908 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1941 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lonicera similis* Hemsley

1426 (A, HIB, NY, PE, UC).

*Lonicera taksienensis* Franchet

976 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Lonicera tangutica* Maxim.

907 (A).

Collection no. 907 represents a mixed collection, part of which (no. 907a) is *Lonicera koehneana* Rehder. The identity and the distribution of the specimens in Chinese herbaria are not known.



*Lonicera tragophylla* Hemsley

611 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Lonicera trichopoda* Franchet\*

1743 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Sambucus adnata* Wallich ex DC.\* (syn.: *S. schweriniana* Rehder)

38 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Sambucus chinensis* Lindley

1108 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Triosteum himalayanum* Wallich

50 (A, HIB, NA, NAS, NY, PE, UC); 175 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 970 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Viburnum betulifolium* Batalin

557 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1043 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1098 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1415 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Viburnum cylindricum* Buch.-Ham. ex D. Don

445 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1414 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1930 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Viburnum erubescens* Wallich

32 (A, CM, HIB, KUN, NA, NAS, PE, UC); 947 (A, HIB, NA, PE).

*Viburnum flavescens* W. W. Sm.\*

1035 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Viburnum foetidum* Wallich var. *rectangulatum* (Graebner) Rehder\* in Sargent, Trees Shrubs 2: 114. 1908.

1411 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 2002 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Viburnum formosanum* (Maxim.) Hayata\*

434 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Viburnum hupehense* Rehder subsp. *hupehense*\*14 (A, HIB, NA, PE); 73 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 190 (A, HIB, NA, PE); 241 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 390b (A; see *V. lobophyllum* for note on distribution of this collection); 607 (A, HIB); 630 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1199 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1325 (A, HIB, NA, NY, PE); 1577 (A, HIB, NA, NAS, PE, UC); 1733 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1766b (A, NA).Collection no. 1766 represents a mixed collection, part of which (1766a) is *Viburnum ovalifolium* Rehder. The identity and the distribution of the specimens in Chinese herbaria are unknown.*Viburnum hupehense* Rehder subsp. *septrionale* Hsu\*, Acta Phytotax. Sinica 11: 77. 1966.

98 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC); 1286 (A, HIB, NA, NAS, PE).

*Viburnum ichangense* Rehder var. *ichangense*

1219 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1331 (A, CM, E, HIB,



KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1889a (A, NA, NY); 2038 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

***Viburnum ichangense* Rehder var. *atratocarpum* (Hsu) T. R. Dudley & S. C. Sun, comb. nov.\***

BASIONYM. *Viburnum erosum* subsp. *ichangense* (Hemsley) P. S. Hsu var. *atratocarpum* P. S. Hsu, Acta Phytotax. Sinica **13**(1): 127. 1975.

446 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 775 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1889b–d (A, CM, NA, UC).

Collection no. 1889 represents a mixed collection, part of which (1889a) is *Viburnum ichangense* Rehder var. *ichangense*. The identity and the distribution of the collections in China are not known.

***Viburnum lobophyllum* Graebner\***

250 (A, CM, HIB, KUN, NA, NAS, NY, PE); 390a (A, CM, NA, NY, PE, UC); 874 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1416 (A, HIB, KUN, NA, NAS, NY, PE, UC).

Collection no. 390 represents a mixed collection and was renumbered 390a and 390b (*Viburnum hupehensis* subsp. *hupehensis*). The identity and the distribution of the sheets in Chinese herbaria, other than the sheet at PE, are not known; however, HIB, KUN, NAS, SFDH, and WH all received specimens under no. 390.

***Viburnum ovatifolium* Rehder**

1124 (A, CM, HIB, KUN, NA, PE, SFDH, UC); 1766a (A, CM, NA, NY, WH); 1888 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

***Viburnum plicatum* Thunb. forma *tomentosum* (Thunberg) Rehder, J. Arnold Arb. **26**: 77. 1945.**

1658 (A, HIB).

***Viburnum propinquum* Hemsley**

462 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1069 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1413 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1701 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1904 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

***Viburnum rhytidophyllum* Hemsley**

82 (A, HIB); 152 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 210 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 649 (A, HIB, NA, PE); 1002 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

***Viburnum sargentii* Koehne**

726 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1226 (A, CM, HIB, KUN, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1536 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1730a (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1730b (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC, WH).

***Viburnum setigerum* Hance**

1247 (A, HIB); 1335 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1887 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1963 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 2043 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

***Viburnum sympodiale* Graebner**

1209 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1287 (A, CM, HIB,



KUN, NA, NAS, NY, PE, UC); 1334 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Viburnum utile* Hemsley

1412 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1581 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1618 (A, CM, HIB, NA, NAS, NY, PE).

*Viburnum veitchii* C. H. Wright\*

374 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 861 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1052 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Weigela japonica* Thunb. var. *sinica* (Rehder) Bailey, Gentes Herb. 2: 49. 1929.

460 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 750 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1951 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

VALERIANACEAE

*Patrinia angustifolia* Hemsley

81 (A, CM, HIB, PE).

*Patrinia monandra* C. B. Clarke

25 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 573 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC); 755a (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1222 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

DIPSACACEAE

*Dipsacus asper* Wallich

756 (A, CM, HIB, NAS, NY, PE, UC).

*Dipsacus japonicus* Miq.

2 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 64 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Triplostegia glandulifera* Wallich

1349 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

CUCURBITACEAE

*Gynostemma cardiospermum* Cogn. ex Oliver (distributed as *Gynostemma pentaphyllum* (Thunb.) Makino, which has free or only slightly united filaments; our specimens have united filaments)

538 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Hemsleya chinensis* Cogn. ex Forbes & Hemsley

490 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 641 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Schizopepon dioicus* Cogn.

1034 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1251 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Thladiantha henryi* Hemsley

62 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Thladiantha maculata* Cogn.\*

1323 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).



*Thladiantha nudiflora* Hemsley

637 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 794 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1477 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

## CAMPANULACEAE

*Adenophora axilliflora* Borbas

3 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 52 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 335 (A, HIB, PE).

*Adenophora capillaris* Hemsley

60 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 201 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1122 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1154 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Adenophora wilsonii* Nannf.

1280 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Campanula punctata* Lam.

99 (HIB); 179 (HIB); 324 (A, HIB, NY, PE); 360 (A, CM, HIB, KUN, NA, NAS, PE, UC).

*Campanumoea javanica* Blume var. *japonica* (Maxim.) Makino, Bot. Mag. Tokyo 22: 155. 1908. (syn.: *C. maximowiczii* Honda)

455 (A, HIB, NY, PE, UC, WH); 2009 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Codonopsis pilosula* (Franchet) Nannf.

1057 (A, HIB).

*Codonopsis tangshen* Oliver

97 (A, HIB, KUN, NA, NAS, PE, UC); 186 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 234 (A, CM, HIB, KUN, NA, NY, PE, SFDH, UC); 1881 (A, CM, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pratia nummularia* (Lam.) A. Br. & Ascherson

1964 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

## COMPOSITAE

*Adenocaulon himalaicum* Edgew.

548 (A, HIB, NA, NAS, NY, PE); 1042 (A, HIB, NY, PE, UC).

*Ainsliaea gracilis* Franchet

1970 (A, CM, HIB, NA, NAS, PE, UC); 2041 (A, HIB, NA, NY, PE, UC).

*Ainsliaea triflora* (Buch.-Ham.) Druce\*

1598 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Anaphalis margaritacea* (L.) Benth. & Hooker subsp. *japonica* (Sch.-Bip.) Kitamura, Acta Phytotax. Geobot. 5: 148. 1936. (distributed as *A. margaritacea* var. *japonica* (Sch.-Bip.) Makino)

22 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Anaphalis sinica* Hance

44 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 963 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Artemisia annua* L.

757 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1567 (A, HIB, NAS, NY, PE, UC); 1643 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Artemisia argyi* Lévl. & Vaniot

1520 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Artemisia argyi* Lévl. & Vaniot var. *incana* (Maxim.) Pampan. Nuovo Giorn. Bot. Ital. 36: 451. 1930.

1597 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Artemisia capillaris* Thunb.

761 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Artemisia lactiflora* Wallich

323 (A, CM, HIB, KUN, NA, NAS, PE, UC).

*Artemisia subdigitata* Mattf.

59 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Aster ageratoides* Turcz. var. *ageratoides*

122 (A, HIB, NAS, NY, PE, UC); 1277 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

Collection no. 122 was distributed as *A. ageratoides* var. *scaberulus* (Miq.) Ling, and collection no. 1277 as *A. ageratoides* var. *micranthus* Ling; both varietal names are unpublished.

*Aster ageratoides* Turcz. var. *laticorymbus* (Vaniot) Hand.-Mazz. Acta Horti Gothob. 12: 214. 1938.

587 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 623 (A, CM, HIB, NA, NAS, NY, PE, SFDH, UC); 1857 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Aster albescens* (DC.) Hand.-Mazz.

1061 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Aster brachyphyllus* Chang\*

1619 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Bidens parviflora* Willd.

1662 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Bidens pilosa* L.

1404 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1405 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Bidens tripartita* L.

1256 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cacalia ainsliaeflora* (Franchet) Hand.-Mazz. (syn.: *C. leucanthema* (Dunn) Ling)

1162 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Cacalia hastata* L. var. *glabra* Ledeb. Fl. Altaica 4: 52. 1833.

878 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Cacalia leucocephala* (Franchet) Hand.-Mazz.

35 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cacalia profundorum* (Dunn) Hand.-Mazz.

610 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cacalia sinica* Ling

1783 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Cacalia tangutica* (Franchet) Hand.-Mazz.

21 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 670 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Cacalia vespertilio* (Franchet) Hand.-Mazz.\*

1687 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Carpesium cernuum* L.

689 (A, HIB, PE, UC).

*Carpesium divaricatum* Sieb. & Zucc.

535 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Carpesium faberi* Winkler

487 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Chrysanthemum boreale* (Makino) Makino\* (syn.: *Dendranthema boreale* (Makino) Ling)

895 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1329 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1742 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Chrysanthemum indicum* L. (syn.: *Dendranthema indica* (L.) Moulins)

132 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 959 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Cirsium fargesii* (Franchet) Diels

54 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Cirsium henryi* (Franchet) Diels

938 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Cirsium lineare* (Thunb.) Sch.-Bip. var. *intermedium* (Pampan.) Petrak, Repert. Spec. Nov. Regni Veg. 43: 276. 1938.

740 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Conyza canadensis* (L.) Cronq.

721 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Erigeron elongatus* Ledeb.

33 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Eupatorium chinense* L. (including *E. japonicum* Thunb.)

1229 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1519 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Galinsoga parviflora* Cav.

431 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Gynura crepidioides* Benth

489 (A, CM, HIB, KUN, NAS, NY, PE, SFDH, UC, WH).

*Kalimeris indica* (L.) Sch.-Bip.

1105 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Lactuca graciliflora* (Wallich) DC.\*

2017 (A, HIB, NY, PE).

*Leontopodium japonicum* Miq.

66 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 461 (A, CM, HIB, NAS, PE, UC); 701 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Ligularia hodgsonii* Hooker

362 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Ligularia veitchiana* (Hemsley) Greenman

1205 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Pertya sinensis* Oliver

1537 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Picris hieracioides* L. subsp. *japonica* (Thunb.) Krylov, Fl. Altai, 727. 1904.

121 (A, HIB, KUN, NA, NAS, NY, PE, UC); 354 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC); 951 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Prenanthes tatarinowii* Maxim.

681 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 968 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Rhynchospermum verticillatum* Reinw.\*

423 (A, HIB, PE, UC).

*Saussurea cordifolia* Hemsley

153 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1765 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Saussurea deltoides* (DC.) C. B. Clarke\*

1505 (A, CM, HIB, KUN, NAS, NY, PE, SFDH, UC, WH).

*Saussurea silvestrii* Pampan.

400 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Saussurea veitchiana* Drumm. & Hutch.

162 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 953 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Saussurea* sp.

1873 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Senecio scandens* Buch.-Ham. ex D. Don

796 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 823 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Siegesbeckia pubescens* Makino

480 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Solidago decurrens* Lour.

1257 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 2016 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Synurus deltoides* (Aiton) Nakai

1737 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Youngia denticulata* (Houtt.) Kitamura (syn.: *Ixeris denticulata* (Houtt.) Stebbins)

1617 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

MONOCOTYLEDONES

GRAMINEAE

*Agrostis clavata* Trin., s.l.\*

1321 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Arthraxon hispidus* (Thunb.) Makino

1402 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Arthraxon hispidus* (Thunb.) Makino var. *cryptatherus* (Hackel) Honda\*, Bot. Mag. Tokyo 39: 277. 1925.

1655 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Dactylis glomerata* L.

972 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Deschampsia caespitosa* (L.) Beauv.

47 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Deyeuxia sylvatica* (Schrader) Kunth\*

392 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Digitaria sanguinalis* (L.) Scop.

1471 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Erianthus fulvus* Nees

1403 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Isachne nipponensis* Ohwi

1959 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Melica onoei* Franchet & Sav.

687 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Microstegium nudum* (Trin.) A. Camus\*

338 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1966 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Muhlenbergia hugelii* Trin.\*

725 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

*Oplismenus undulatifolius* (Ard.) Roemer & Schultes

425 (A, CM, HIB, KUN, NAS, NY, PE, UC); 688 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Pennisetum alopecuroides* (L.) Sprengel

1948 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Phleum alpinum* L.

43 (A, CM, HIB, KUN, NA, NAS, NY, PE).

*Poa nemoralis* L., s.l.\*

117 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Setaria excurrans* (Trin.) Miq.\*

1111 (A, HIB, NAS, NY, PE).

## CYPERACEAE

*Bulbostylis densa* (Wallich) Hand.-Mazz.

1969 (A, CM, HIB, KUN, NA, NAS, NY, PE, UC).

*Carex brunea* Thunb.

1709 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Carex gentilis* Franchet\*

555 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Eriophorum comosum* Nees

1916 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Rhynchospora chinensis* Nees & Meyen

1188 (A, CM, HIB, NAS, NY, PE).

*Scirpus lushanensis* Ohwi

1189 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



ARACEAE

*Arisaema consanguineum* Schott

87 (HIB); 788 (A, HIB).

*Arisaema erubescens* (Wallich) Schott\*

1820 (A, HIB).

*Arisaema fargesii* Buchet

1604 (A, HIB).

*Arisaema heterophyllum* Blume\*

1594 (A, HIB, NY, PE).

*Arisaema lobatum* Engler

1243 (A, HIB, KUN, NAS, NY, PE).

LEMNACEAE

*Lemna japonica* Landolt\*, Veröff. Geobot. Inst. ETH Stiftung Rübel Zürich  
70: 23. 1980.

1689 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH).

ERIOCAULACEAE

*Eriocaulon buergerianum* Koern.

2061 (A, HIB, NY).

*Eriocaulon robustum* Makino\*

1187 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

COMMELINACEAE

*Streptolirion volubile* Edgew.

1075 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1659 (A, CM, HIB, KUN,  
NA, NAS, NY, PE, SFDH, UC).

JUNCACEAE

*Juncus effusus* L.

1191 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Juncus leschenaultii* Gay

1190 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1259 (A, CM, HIB, KUN,  
NAS, NY, PE, UC).

*Juncus luzuliformis* Franchet\*

42 (A, HIB, NY, PE).

*Juncus modicus* N. E. Br.

118b (A, NA, PE, UC).

*Juncus potaninii* Buch.

118a (A, PE).

LILIACEAE

*Aletris stenoloba* Franchet

1547 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).



*Allium cyaneum* Regel

171 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Allium henryi* C. H. Wright

870 (A, CM, HIB, KUN, NAS, NY, PE, SFDH, UC); 1713 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Allium victorialis* L.

1822 (A, CM, HIB, PE).

*Cardiocrinum giganteum* (Wallich) Makino var. *yunnanense* (Leicht. ex Elwis) Stearn, Gard. Chron. **124**: 4. 1948.

196 (A, CM, HIB, NA, NY, UC).

*Clintonia udensis* Trautv. & Meyer

881 (A, CM, HIB, PE, UC).

*Disporum bodinieri* (Lévl. & Vaniot) Wang & Tang, Bull. Res. Peking Univ. **6**: 20. 1949, *fide* Fl. Reip. Pop. Sin. **15**: 44. 1978.

1112 (A, CM, HIB, KUN, NA, NAS, PE, UC).

*Disporum cantoniense* (Lour.) Merr.

733 (A, CM, HIB, KUN, NAS, PE, UC); 1160 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 1249 (A, HIB, NY, PE); 1393 (A, HIB, KUN, NA, NY, PE, UC); 1867 (A, HIB, NA, NY, PE).

*Hemerocallis minor* Miller

63 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1051 (A, HIB, PE).

*Lilium lancifolium* Thunb.

207 (A, CM, HIB, KUN, NAS, PE, UC); 361 (A, HIB; distributed as *Lilium* sp.); 685 (HIB); 855 (A, HIB, NA, NY, PE); 1059 (HIB).

*Lilium taliense* Franchet

1480 (A, HIB).

*Liriope graminifolia* (L.) Baker

454 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Ophiopogon bodinieri* Lévl.

1398 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH).

*Paris polyphylla* Sm.

45 (HIB); 198 (A, CM, HIB, KUN, NA, NAS, PE, UC); 304 (A, CM, E, HIB, KUN, KYO, MO, NA, NAS, NY, PE, SFDH, UC, WH); 627 (A, HIB); 886 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1396 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Polygonatum cyrtonema* Hua

695 (HIB).

*Polygonatum odoratum* (Miller) Druce

1821 (A, HIB).

*Polygonatum sibiricum* Delas ex Redouté

387 (A, CM, HIB, KUN, NA, NAS, NY, PE).

*Polygonatum verticillatum* (L.) All.

343 (A, HIB, NA, NY); 1785 (A, CM, HIB, NAS, PE, UC).

*Polygonatum zanlanscianense* Pampan.

481 (A, HIB).

*Reineckia carnea* (Ander.) Kunth

507 (A, HIB); 1453 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



*Smilacina henryi* (Baker) Hara

30 (HIB).

*Smilax discotis* Warb.

1582 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Smilax glauco-china* Warb.

477 (A, HIB, PE); 1635 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Smilax megalantha* C. H. Wright\*

457 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 2005 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

*Smilax menispermoides* A. DC.

731 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC).

*Smilax polycolea* Warb.

632 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1223 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1340 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 1399 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Smilax riparia* A. DC. var. *acuminata* (C. H. Wright) Wang & Tang, Fl. Reip. Pop. Sin. 15: 192. 1978.

1339 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1786 (A, HIB, NY, PE).

*Smilax scobinicaulis* C. H. Wright

792 (A, HIB, NAS, NY, PE, UC); 1586 (A, CM, HIB, KUN, NAS, PE, SFDH, UC); 1690 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Smilax stans* Maxim.

415 (A, HIB); 652 (A, HIB).

*Streptopus obtusatus* Fassett

48 (A, HIB, PE, UC).

*Tricyrtis maculata* (D. Don) Macbr.

80 (A, HIB, NA); 151 (A, CM, HIB, KUN, NA, NAS, PE, SFDH, UC); 312 (A, CM, E, HIB, KUN, KYO, NA, NAS, NY, PE, SFDH, UC, WH); 505 (A, HIB, PE, UC).

*Tupistra chinensis* Baker

1033 (A, HIB, NAS).

*Veratrum oblongum* Loes. f.

638 (HIB).

## DIOSCOREACEAE

*Dioscorea nipponica* Makino var. *rosthornii* Prain & Burkill, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 73(Suppl. 7): 2. 1904. (syn.: *D. giraldii* R. Knuth)

233 (A, CM, HIB, KUN, NA, NAS, PE, UC); 391 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 537 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 844 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1305 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH); 1326 (A, HIB, KUN, NA, NAS, NY, PE, UC).

*Dioscorea oppositifolia* L. (syn.: *D. opposita* Thunb.)

802 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC); 1470 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Dioscorea zingiberensis* C. H. Wright

1652 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).



## IRIDACEAE

*Belamcanda chinensis* (L.) DC.

1651 (A, CM, E, HIB, KUN, NA, NAS, NY, PE, SFDH, UC, WH).

*Iris wilsonii* C. H. Wright

952 (A, CM, HIB, KUN, NA, NAS, NY, PE, SFDH, UC).

## ZINGIBERACEAE

*Zingiber mioga* (Thunb.) Roscoe

2022 (A, HIB, PE).

## ORCHIDACEAE

*Bletilla ochracea* Schlechter

476 (A, HIB, PE, UC).

*Coeloglossum bracteatum* (Muhl.) Parl. (syn.: *Coeloglossum viride* (L.) C. J.

Hartman var. *bracteatum* (Muhl.) Richter, Pl. Europ. **1**: 278. 1890.)

885 (A, HIB, PE).

*Cypripedium fasciolatum* Franchet\*

1808 (A, HIB).

*Neottianthe cucullata* (L.) Schlechter\*

1796 (HIB); 1809 (A, HIB).

*Neottianthe monophylla* (Ames & Schlechter) Schlechter\*

1185 (A, HIB, PE).

*Platanthera* cf. *hologlottis* Maxim.\*

950 (HIB).

*Pleione bulbocodioides* (Franchet) Rolfe

1391 (A, HIB).

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APPENDIX 1. Cross reference of collection numbers with collection localities,\*  
1980 Sino-American Botanical Expedition.

| COLLECTION<br>NUMBERS | LOCALITY | COLLECTION<br>NUMBERS | LOCALITY | COLLECTION<br>NUMBERS | LOCALITY |
|-----------------------|----------|-----------------------|----------|-----------------------|----------|
| 1-25                  | 1        | 856-938               | 26       | 1505-1517             | 43       |
| 26-50                 | 4        | 939                   | 27       | 1518                  | 42       |
| 51-94                 | 2        | 940, 941              | 28       | 1519, 1520            | 43       |
| 95-100                | 3        | 942, 943              | 27       | 1521                  | 42       |
| 101-109               | 2        | 944                   | 28       | 1522-1526             | 43       |
| 110-125               | 4        | 945-966               | 27       | 1527-1541             | 44       |
| 126-128               | 5        | 967-976               | 28       | 1542-1553             | 45       |
| 129-150               | 20       | 977-998               | 27       | 1554, 1555            | 46       |
| 151-153               | 3        | 999-1050              | 29       | 1556                  | 47       |
| 154-178               | 4        | 1051-1060             | 8        | 1557-1567             | 45       |
| 179-207               | 5        | 1061, 1062            | 10       | 1568-1573             | 48       |
| 208-242               | 7        | 1063-1100             | 11       | 1574                  | 50       |
| 243, 244              | 9        | 1101-1114             | 23       | 1575                  | 49       |
| 245-250               | 10       | 1115                  | 17       | 1576-1591             | 48       |
| 251-269               | 4        | 1116-1118             | 23       | 1592-1596             | 51       |
| 270-284               | 7        | 1119                  | 22       | 1597-1674             | 52       |
| 285-298               | 11       | 1120-1150             | 24       | 1675-1692             | 53       |
| 299, 300              | 12       | 1151-1181             | 29       | 1693-1727             | 54       |
| 301-329               | 6        | 1182                  | 30       | 1728                  | 55       |
| 330-350               | 8        | 1183                  | 31       | 1729                  | 56       |
| 351-354               | 4        | 1184-1186             | 32       | 1730-1735             | 57       |
| 355-400               | 5        | 1187-1275             | 33       | 1736                  | 56       |
| 401-427               | 11       | 1276-1300             | 34       | 1737                  | 57       |
| 428-443               | 13       | 1301-1323             | 35       | 1738-1770             | 58       |
| 444-485               | 12       | 1324                  | 36       | 1771-1786             | 59       |
| 486, 487              | 13       | 1325                  | 35       | 1787-1796             | 58       |
| 488-500               | 14       | 1326-1350             | 38       | 1797-1823             | 60       |
| 501-532               | 15       | 1351-1360             | 34       | 1824, 1825            | 61       |
| 533-538               | 16       | 1361-1363             | 37       | 1826-1830             | 62       |
| 539                   | 15       | 1364-1378             | 34       | 1831-1835             | 61       |
| 540-550               | 17       | 1379-1381             | 37       | 1836-1849             | 60       |
| 551-561               | 14       | 1382-1384             | 38       | 1850                  | 61       |
| 562-590               | 17       | 1385-1400             | 39       | 1851-1895             | 63       |
| 591-599               | 18       | 1401-1437             | 40       | 1896-1911             | 64       |
| 600-626               | 19       | 1438-1454             | 41       | 1912-1920             | 65       |
| 627-650               | 20       | 1455                  | 40       | 1921-1924             | 64       |
| 651                   | 18       | 1456-1465             | 39       | 1925-2000             | 66       |
| 652-669               | 20       | 1466                  | 42       | 2001-2061             | 67       |
| 670, 671              | 18       | 1467-1472             | 43       | 2062-2074             | 68       |
| 672                   | 20       | 1473                  | 42       | 2075                  | 69       |
| 673-716               | 21       | 1474-1484             | 43       | 2076-2081             | 70       |
| 717-750               | 24       | 1485                  | 42       | 2082                  | 71       |
| 751-854               | 25       | 1486-1503             | 43       | 2083-2085             | 67       |
| 855                   | —†       | 1504                  | 42       |                       |          |

\*Collection localities are given in APPENDIX 2.  
†Vicinity of Jiuhuping Forest Farm, 8 September.



APPENDIX 2. **Locality data, 1980 Sino-American Botanical Expedition.**

## SHENNONGJIA FOREST DISTRICT

- 1.\* S of Jiuhuping Forest Farm along W side of Jizigou canyon. Elev. ca. 1650 m. 25 August.
2. Ca. 0.5 km S of Jiuhuping Forest Farm in side canyon on E side of Jizigou canyon. Elev. ca. 1700 m. 25 August.
3. Side canyon on E side of Jizigou canyon directly E of Jiuhuping Forest Farm. Elev. ca. 1700 m. 25 August.
4. Vicinity of Chuifeng Pass. Elev. 2500–3000 m. 26 August.
5. Along Qiaodonggou canyon W of road between Jiuhuping Forest Farm and Bancang. Elev. ca. 1950 m. 27 August.
6. Along Yuergou canyon. Elev. 2000–2200 m. 27 August.
7. Along Miaogou canyon. Elev. 1800–1900 m. 28 August.
8. Side canyon on E side of Jizigou canyon directly E of Jiuhuping Forest Farm. Elev. ca. 1850 m. 28 August.
9. Xiaodangyang, along Dangyang River near km 53 from Xingshan Xian. Elev. ca. 1000–1050 m. 29 August.
10. Vicinity of Mucheng along Jiuchong River. Elev. ca. 1000 m. 29 August.
11. W of Hongriwan construction camp along trail leading toward Huanghunling Mt. Elev. ca. 1300 m. 30 August.
12. Laojunshan Yaowan canyon on W side of Jiuchong River, ca. 1 km S of Mucheng. Elev. 1000–1250 m. 31 August.
13. Vicinity of Mucheng along Jiuchong River. Elev. ca. 940 m. 31 August.
14. Side canyon of Mengjia River just N of bridge crossing Mengjia River N of Mucheng. Elev. ca. 1000 m. 1 September.
15. E side of Mengjia River in vicinity of Hongriwan construction camp. Elev. ca. 1300 m. 1 September.
16. Between Mucheng and Hongriwan construction camp along Mengjia River. Elev. ca. 1000 m. 1 September.
17. Along trail between Hongriwan construction camp and Qiujiaping. Elev. 1200–1400 m. 2 September (no. 1115 collected on 5 September).
18. Vicinity of Qiujiaping. Elev. ca. 1435 m. 2 September.
19. Vicinity of Qiujiaping. Elev. ca. 1440–1650 m. 3 September.
20. Along trail from Qiujiaping toward Laojun Mt. Elev. 1500–2300 m. 3 September.
21. Vicinity of Qiujiaping in side canyons on E side of Mengjia River. Elev. 1500–1900 m. 4 September.
22. Disturbed slope above Jizigou. Elev. ca. 1800 m. 4 September.
23. Ca. 1 km W of Leigutai Hydroelectric Power Station at confluence of Jiuchong and Dangyang rivers. Elev. ca. 390 m. 5 September.†
24. Vicinity of Muyuping Forest Brigade on SE side of watershed divide between Changjiang (Yangtze) and Hanjiang rivers, near km 73 from Xingshan Xian. Elev. 1450–1600 m. 7 September.
25. NE of Guanmenshan along S side of Shicao River. Elev. ca. 1150 m. 8 September.
26. Vicinity of Dalongtan and Xiaolongtan on W side of road. Elev. 2300–2600 m. 9 September.
27. Vicinity of Xiaoshennongjia. Elev. 2700–2900 m. 10 September.
28. Along road between Guanmenshan and Xiaoshennongjia. 2600–2650 m (no. 940 at 1500 m). 10 September.
29. Vicinity of Duanjiangping. Elev. 1300–1800 m. 11 September.
30. Gangou, on road between Jiuhuping Forest Farm and Dajiuhu. Elev. ca. 1700 m. 12 September.
31. Ma Mt., on road between Jiuhuping Forest Farm and Dajiuhu. Elev. ca. 1700 m. 12 September.

\*Locality number.

†Localities 23 and 65 are in Xingshan Xian, just south of the Shennongjia Forest District.



32. Banbiyan, on road between Jiuhuping Forest Farm and Dajiuhu. Elev. ca. 2650 m. 12 September.
33. Zhushanyazi Pass on W side of Dajiuhu basin. Elev. 1780 m. 13 September.
34. S end of Loyang River gorge near Pingqian. Elev. ca. 1300 m. 14 September.
35. Ma Mt., on road between Jiuhuping Forest Farm and Dajiuhu. Elev. 2150 m. 14 September.
36. E side of ridge between Pingqian and Dajiuhu. Elev. 2000 m. 14 September.
37. Along road between Pingqian and Dajiuhu. Elev. 1700 m. 14 September.
38. Vicinity of Xiaojiuhu. Elev. 2000 m. 15 September.
39. Hillside above Qianjiaping. Elev. 1400–1800 m. 17 September.
40. Honghua ravine on W side of Dangyang River N of Honghua. Elev. ca. 820 m. 17 September.
41. W side of Dangyang River at km 44 from Xingshan Xian, side canyon on W-SW side of road. Elev. 725 m. 17 September.
42. Along road above Taizishang on SE side of Yingyu River canyon. Elev. 2000–2050 m. 18 September.
43. Vicinity of Taizishang along Yingyu River. Elev. 2000 m. 18 September.
44. S of Jiuhuping Forest Farm along Jizigou canyon bottom. Elev. 1900 m. 19 September.
45. Vicinity of Yinpo on road between Jiuhuping Forest Farm and Bancang. Elev. 1750 m. 19 September.
46. Between Yinpo and Qiaodonggou canyon on road between Jiuhuping Forest Farm and Bancang. Elev. 2100 m. 19 September.
47. Canyon-side on slope of SE-draining tributary of Jizigou canyon on road between Jiuhuping Forest Farm and Bancang. Elev. 2000 m. 19 September.
48. Along road between Baicaoping and Bajiaomiao. Elevation ca. 1400 m. 20 September.
49. Headquarters of Songlo Commune. Elev. ca. 1000 m. 20 September.
50. Vicinity of Xinping. Elev. 1200 m. 20 September.
51. Side canyon on E side of Songlo River directly E of Songlo Commune headquarters. Elev. 1000–1200 m. 20 September.
52. Vicinity of Houshanping on S side of Hou River. Elev. 800–1050 m. 21 September.
53. Side canyon on E side of Songlo River directly E of Songlo Commune headquarters. Elev. 1000–1200 m. 22 September.
54. Side canyon on E side of Songlo River E of Jingyin. Elev. 1050–2000 m. 22 September.
55. Just S of Tianmen Pass. Elev. 2300 m. 23 September.
56. Along road between Gumiaoya and Panshui. Elev. 1700–1850 m. 23 September.
57. Vicinity of Guijuyuan. Elev. 1800 m. 23 September.
58. Along Xigou canyon. Elev. 1700–1900 m. 24 September.
59. Vicinity of Honghe. Elev. 2050–2200 m. 24 September.
60. Along Changping River NW of Baishayuan. Elev. 1900 m. 25 September.
61. Vicinity of Shibapan. Elev. 1850 m. 25 September.
62. SE of Shibapan along Changping River. Elev. 1500 m. 25 September.
63. Vicinity of Sanyuan. Elev. 1550–1900 m (except no. 1874: road between Baishayuan and Sanyuan. Elev. ca. 2100 m). 26 September.
64. Side canyon on S side of Dangyang River in vicinity of Sanduihe, 4 km W of Xingshan Xian line. Elev. 750 m. 29 September.
65. Canyons and cliffs along road, ca. 12 km from town of Xingshan on road between Xingshan and Jiuhuping Forest Farm. Elev. 330 m. 29 September.†

#### METASEQUOIA REGION OF LICHUAN XIAN

66. Metasequoia area in vicinity of Lojiaba on W side of valley. Elev. ca. 1500 m. 6 October.
67. Metasequoia area in vicinity of Zhuanjiaowan on E side of valley. Elev. ca. 1500 m. 7 October.



68. Metasequoia area in vicinity of Hongshaxi on E side of valley. Elev. ca. 1500 m. 7 October.
69. Wanjatang, on road between city of Lichuan and Zhonglu. Elev. ca. 800 m. 8 October.
70. Metasequoia area in vicinity of Yujiawan, E of Xiaohe. Elev. ca. 1500 m. 8 October.
71. Modaoqi. 9 October.

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